Project 90-280-12
December 1991

Canonie Environmental

Part A
Ground Water Quality Assessment Program
Safety-Kleen Corporation
Chicago Recycle Center

Part B
Ground Water Sampling and Analysis Plan
Safety-Kleen Corporation
Chicago Recycle Center

Safety-Kleen Corporation
Chicago Recycle Center

Prepared For:

Safety-Kleen Corporation
Elgin, Illinois

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PART A

GROUND WATER QUALITY ASSESSMENT PROGRAM SAFETY-KLEEN CORPORATION CHICAGO RECYCLE CENTER

PART B

GROUND WATER SAMPLING AND ANALYSIS PLAN SAFETY-KLEEN CORPORATION CHICAGO RECYCLE CENTER

December 1991 90-280-12

GROUND WATER QUALITY ASSESSMENT PROGRAM FOR FORMER TANKS T-190 THROUGH T-193 SAFETY-KLEEN CORPORATION CHICAGO RECYCLE CENTER

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GROUND WATER QUALITY ASSESSMENT PROGRAM
SAFETY-KLEEN CORPORATION
CHICAGO RECYCLE CENTER

1.0 INTRODUCTION

The following document outlines the requirements of the Ground Water Quality Assessment Program (GQAP) to be implemented at Safety-Kleen Corporation's (Safety-Kleen's) Chicago Recycle Center Site located at 1445 42nd Street in Chicago, Illinois.

This plan is being produced as required in the modified closure plan approval letter dated August 30, 1991 and is part of the continuing closure activities related to former aboveground Tanks T-190 through T-193. Soil sampling conducted before and after tank closure indicates the presence of some volatile and semivolatile organic compounds (VOCs and SVOCs) in the soils. This GQAP is designed to determine the need (if any) for long-term ground water monitoring related to the former tank farm area.

Ground water monitoring wells were installed as part of the field work associated with the supplemental extent of contamination investigation (see the Supplemental Investigation Report). All wells were installed prior to November 1991 in strict accordance with the techniques described in the U.S. Environmental Protection Agency (EPA) "RCRA Groundwater Monitoring Technical Enforcement Guidance Document," September 1986, which is one of the guidance documents specified in the modified closure approval letter.

The following sections of this document detail the well installation techniques and ground water analytical data. Ground water sampling techniques were consistent with the procedures specified in the Sampling and Analysis Plan, which is part of this document. It should be noted that the Supplemental Investigation Report and the Remedial Action Plan for soil are being submitted concurrently with the GQAP.

2.0 MONITORING WELL INSTALLATIONS

2.1 Monitoring Well Network Rationale

The area of the site subject to ground water monitoring is a relatively small area (60 feet by 30 feet, approximately) located along the western property line of the site immediately south of Process Building No. 1. Figure 1 shows the location of this area.

Previous data collected at the site indicated an extremely variable surficial lithology complicated by the presence of old building footings and foundations.

Water level data were available from the piezometers installed by RMT earlier in 1991 could not provide a definitive direction of ground water flow on-site.

The local United States Geological Survey (USGS) topographic maps (Englewood Quadrangle) indicate the presence of the Chicago Sanitary and Ship Canal approximately 1-1/2 miles north of the site. A fork of the ship canal extends southward towards the site. The nearest approach of the fork to the site is approximately 3/4 mile north of the site. The only other significant body of surface water near the site is Lake Michigan, located three miles east of the site. The topographic map also indicates a ground slope towards the northeast. Based on these data, a regional shallow ground water flow direction towards the north and northeast was assumed.

The monitoring wells were arranged around Tank Farm No. 3 based on this assumed ground water flow direction. A total of four shallow wells were planned at the site. Three were to be arrayed north of the tank farm, and one was to be located east of the tank farm, but upgradient (south) of the closed area.

Ground water quality data for the southern area of the site were obtained by RMT during their investigation. This data indicated the presence of some VOCs in the shallow

ground water, but provided no data on ground water quality immediately outside the tank farm. Therefore, it was decided to install shallow monitoring wells to monitor the water table. This proposal had two advantages:

1. Shallow wells would be able to monitor the water table for any floating free product layer.

2. Shallow wells would avoid drilling into a low permeability clay layer and thereby avoid opening of pathways for downward migration of chemical compounds to deeper ground water when shallow ground water quality at the site was unknown.

Based on the lithological data collected during the RMT investigation (May 1991), the shallow wells were designed to monitor the clay/silty clay directly underlying the site. Monitoring well locations were also selected to try and monitor ground water directly downgradient of the closure units. Safety-Kleen has been concerned that ground water impacts from other potential off-site sources may be present. Safety-Kleen believes the ground water monitoring program should only be related to the four tanks undergoing closure.

2.2 Monitoring Well Installation Procedures

As noted in the introduction, monitoring wells were installed in a manner consistent with EPA guidelines. The previous analytical data collected from the soils indicated the presence of volatile organic compounds (VOCs) in the soils and, therefore, a need for stainless-steel monitoring wells. As metals are not a concern at this site, the use of Teflon™ well construction materials was not required. The well construction procedures outlined below will be followed for any future shallow well installations.

Appendix A contains the soil boring logs and Appendix B contains the monitoring well construction detail drawings. As noted in the Supplemental Investigation Report (Canonie 1991), the ground water depth at the site is quite shallow.

The dominant upper lithology at the site was a silty clay which would permit the auger hole to stay open without support. Therefore, the soil boring advanced for each well was drilled using a 5-1/4-inch flight auger. This drilling method reduced the amount of cuttings produced at each hole and therefore minimized the amount of soil that might require disposal. The 5-1/4-inch hole left by the auger was sufficiently large to permit an adequate filter pack thickness to be used during well construction.

Each monitoring well boring was drilled using the techniques described in the Supplemental Investigation Report. Once the hole was drilled and sampled, the augers were removed from the hole, and the assembled well screen and riser were placed in the well. The fine-grained formations present at the site necessitated using a wire-wound No. 10 slot (0.010-inch slot) screen constructed of Type 304 stainless steel. A wire-wound screen was selected to maximize the flow area of the screen and therefore maximize the potential productivity of each well.

Each monitoring well boring was advanced until a layer of clay was reached at a depth of 10 (MW-1) to 12 (MW-2 and MW-3) feet. After concentrically placing each well string in its respective hole, a calculated volume of global No. 5 filter pack was placed in the annular space. The top of the gravel pack was then sounded to ensure it had filled to the proper elevation. The top of the filter pack on MW-2 and MW-3 extends approximately two feet above the top of the five-foot well screen section. The top of the filter pack on MW-1 extends only one foot above the top of the five-foot well screen section. This shorter packing thickness was necessary to insure adequate space for the bentonite seal and casing grout.

A two-foot bentonite seal was constructed on top of each filter pack. The bottom of each bentonite seal was above the water table. Therefore, the calculated volume of bentonite chips was placed and packed into the hole by hand. Clean water was then added to hydrate the chips.

A one-foot concrete seal was constructed on the top of each bentonite seal. While the concrete was plastic, a flush-mount well protector was concentrically installed above the well riser casing. Concrete "mushroomed" from well protector placement was removed to maintain the 5-1/4-inch-diameter well diameter construction. The lid of the well protector casing was placed slightly higher than the adjacent existing grade to facilitate drainage away from the well.

RMT data indicated a very shallow water table one-half to one foot in the closed tank farm, therefore, it was determined to install two recovery sumps in two of the containment cells left after the tank closures. These sumps were constructed of four-inch-outside-diameter 0.10 slotted PVC well screens. The screens were installed to five feet below grade and were surrounded by a filter pack sand comprised of clean washed silica sand (Global No. 5 pack). These sumps will be available if any recovery and treatment of ground water is deemed necessary.

2.3 Well Locations

Wells were placed in an effort to define ground water gradients surrounding former Tank Farm No. 3, following the rationale described in Section 2.1 concerning site hydrologic characteristics. Two wells (MW-2 and MW-3) were placed downgradient or generally north of the former tank farm. One well was placed upgradient (MW-1) or generally south of the former tank farm location. MW-2 is located at the northwest corner of the former Tank Farm No. 3 area. MW-3 is located east of the former Tank Farm No. 3 and approximately 13 feet south of Process Building No. 1. MW-1 is located to the south and east of former Tank Farm No. 3. Exact well locations are given on Figure 1.

A fourth well was planned for the area northeast of Tank Farm No. 3, however, subsurface obstructions were encountered in the five locations attempted. A field decision was made to evaluate the monitoring well and well point data first and then optimize the location of the fourth monitoring well. Based on this data, Safety-Kleen intends to install this well in the near future.

2.4 Ground Water Sampling Frequency

To define the hydrogeologic conditions in the vicinity of the former Tank Farm No. 3, water levels will be obtained from each of the monitoring wells. At the same frequency, ground water samples will be obtained to characterize the distribution of target compound list (TCL) parameters at the site (see Section 4.0).

All future water level data and sample collection will be completed in accordance with Section 2.1 of the Ground Water Sampling and Analysis Plan.

2.5 Monitoring Well Maintenance and Inspection

Monitoring wells are sometimes damaged or destroyed as a result of vehicular activity, vandalism, or subsurface settlement. Any damaged wells will be replaced or repaired as soon as possible to ensure regular monitoring of ground water conditions. Monitoring wells will be inspected simultaneously with the sampling program. Benchmarks will be reset in the event of well replacement.

3.0 GROUND WATER DATA

3.1 General Water Supply Data

Illinois has an abundant supply of water available from surface and ground water supplies (USGS 1987). Some of the largest withdrawals of fresh water from the Illinois water resources occur in the Chicago area (Lake, Cook, and Will Counties). Total water usage from the Chicago area resources is approximately 6,070 million gallons/day (M gal/d); 97 percent of this total (5,888 M gal/d) is obtained from Lake Michigan (USGS 1987). This heavy reliance on Lake Michigan water is partly due to the general declining of the ground water levels and declining ground water quality. However, ground water is still used in some locations (primarily Lake County) where the quality of the ground water is good. Ground water does not appear to be used in the vicinity of the Chicago Recycle Center.

Ground water supplies in the Chicago area are generally obtained from three aquifers. The first is the Sand and Gravel Aquifer, which is part of the extensive suite of glacial sediments left in Northern Illinois by the last ice age. This aquifer is not a continuous formation, but is comprised of numerous sand zones within the glacial sediments. The second is the Shallow Dolomite Aquifer. The third major aquifer is the deep Cambrian-Ordovician Aquifer, which underlies much of northern Illinois and is used by both the Chicago and Rockford metropolitan areas. Pumping from these deep aquifers reached a peak of 199.3 M gal/d during 1984 in the Chicago area but has since declined to 174 M gal/d (Kirk, 1985). The high production rates during the 1980s led to a lowering of water levels in the Cambrian-Ordovician by up to 850 feet (Kirk, et al., 1982). The lowering of the water levels has been combated by increased allocations of surface water from Lake Michigan. This process has allowed the recovery of the water levels in the deep surface aquifer to begin.

3.2 Ground Water in the Chicago Area

Based on the levels of surface water usage noted in Section 3.1, ground water usage is not a major source of the potable water supply in the Chicago area, representing three percent of the total water supply. Ground water is available from three aquifers beneath the Chicago area. These aquifers are the Sand and Gravel Aquifer, Shallow Dolomite Aquifer, and the Cambrian-Ordovician Aquifer.

The Sand and Gravel Aquifer is widely distributed throughout the state of Illinois. It is a primarily shallow aquifer and varies widely, as the sands within the glacial tills are discontinuous and highly variable in character. Typically, this aquifer is used for domestic supplies (private wells) and is not a source for municipal water supplies. The water from this aquifer is generally hard or very hard, 250 to 510 mg/l (USGS, 1986) as calcium carbonate. With the exception of iron concentrations (50 to 4,100 mg/l) (USGS, 1986) other water quality parameters fall within the State Drinking Water Standards criteria.

In the Chicago area the glacial drift deposits are approximately 100 feet thick and are underlain directly by the Shallow Dolomite Aquifer. This aquifer represents the first of the so-called "bedrock" aquifers in this region. Water quality from this aquifer is generally within the state of Illinois guidelines except for dissolved solids which range from 400 to 1,200 mg/l (USGS 1986) and exceed the State Advisory level.

Below the Dolomite Aquifer lies a confining unit which separates the Dolomite Aquifer from the deeper Cambrian-Ordovician Aquifer. Although not always present elsewhere in Illinois, this confining unit is continuous below the Chicago region and therefore ensures that the deep Cambrian-Ordovician Aquifer is hydraulically separate from the shallower aquifers. Ground water quality in this aquifer is good and conforms to the Illinois guidelines for water quality (USGS, 1986).

Based on the preceding data, it is fairly certain that ground water supplies do not form a major part of the potable water supplies in the area of Chicago surrounding the Safety-Kleen Site.

The Chicago Recycle Center site is located in an area formerly part of the Union Station Stockyards. When the stockyards were removed, the area became occupied by a variety of light and heavy industries and the area is zoned M-5, which is the heaviest classification of industry permitted in the Chicago area. Commercial operations including small businesses, gasoline stations, automobile paint shops, and retail stores are located along Ashland Avenue located 1,000 feet west of the site.

3.3 Regional Ground Water Flow

Based on regional information on topography and surface water flow patterns, the regional ground water flow in the shallow formations should be toward the north or northeast. This is the direction of the surface topography slope and is in the direction of the closest surface water (the Chicago Ship Canal). No water extraction wells are depicted on the USGS Quadrangle (Englewood, Illinois) for the area near the site; therefore this assumed flow direction is unlikely to be modified.

This assumed flow direction formed the basis for the proposed monitoring well locations surrounding the closed tank farm at the Safety-Kleen Site. This rationale is also described in more detail in Section 2.1.

3.4 Site Ground Water Flow

Ground water levels in the monitoring wells were measured approximately one week after installation during October 1991. The well elevations were surveyed at the same time and the top-of-casing elevations and ground water elevations are summarized in Table 1. Based on these data and the new data from the surveyed piezometers, a

potentiometric surface map for the shallow ground water was completed. This map is included as Figure 2 and indicates that ground water appears to be flowing towards MW-1 from the tank farm area.

Currently, there is a lack of ground water elevation data for the area east of Tank Farm No. 3. It is possible that either MW-1 contains an abnormally low ground water level or that Piezometer PW-4 contains an anomalous level. Safety-Kleen plans to install the fourth monitoring well discussed earlier in the vicinity of the southwest corner of Tank Farm No. 2 (near Location B-4) to verify the water level obtained from MW-1 and to obtain ground water quality data for the area east of Tank Farm No. 3. Ground water flow data in this area will be verified during future monitoring events.

Based on observations made while drilling Soil Borings B-3 and B-4, which had water levels comparable to the six other borings, the potential problem with the low ground water level in MW-1 may be related to the proximity of the two water collection sumps close to MW-1.

3.5 Ground Water Analytical Results

The ground water samples obtained from the three monitoring wells were analyzed by the Weston/Gulf Coast Laboratory located in University Park, Illinois. All ground water samples were collected on November 7, 1991 and shipped in coolers via overnight courier service to the laboratory.

Samples were submitted for EPA Method 8240 VOC analysis and Method 8270 semivolatile organic compound (SVOC) analysis. These analyses were performed in strict accordance with SW-846 procedures, as requested in the August 30, 1991 closure approval letter and as clarified by Mr. Ken Lovett of the Illinois Environmental Protection Agency (IEPA). In addition to the standard list of compounds for these analyses, the additional nonstandard compounds from the site soil TCL were also analyzed. Table 2

provides a summary of the VOCs detected, and Table 3 summarizes the detected SVOCs. Appendix C contains the laboratory analytical report and data package.

The data from these recent ground water samples were also compared to the ground water data collected by RMT during the earlier investigation. RMT installed four piezometers at the site. Their locations are shown on Figure 2. Note that RMT did not analyze the ground water for Method 8270 compounds.

RMT data indicate that the water collected within the tank farm (Piezometer No. 1) contained methylene chloride, chloroform, and toluene in concentrations of 9.5 mg/l, 50 mg/l, and 470 mg/l, respectively.

Methylene chloride was also detected in piezometer Locations P-3 and P-4 at 0.002 mg/l and 0.012 mg/l, respectively. However, the ground water samples obtained from outside the tank farm area generally contained different compounds than from within the tank farm. These different compounds are chloroethane (0.004 to 0.024 mg/l); 1,1-dichloroethane (0.023 to 0.096 mg/l); 1,2-dichloroethene (0.005 to 0.021 mg/l); and trichloroethylene (0.003 to 0.028 mg/l). The above compounds were detected at P-3 and P-4 locations, and the lowest concentration always represented P-3. In addition to the above compounds, 1,1,1-trichloroethane was also detected in P-4 at a concentration of 0.029 mg/l. This data gave cause for concern that sources unrelated to the closure units may be affecting ground water quality at the Chicago Recycle Center.

Toluene also occurred in the monitoring well samples. Toluene occurred in MW-1 at a concentration of 0.53 mg/l. MW-3, which is located approximately 27 feet north of the former tank farm, contained 1.8 mg/l, and MW-2, which is immediately adjacent to the northwest corner of the tank farm, contained 300 mg/l. This distribution of compounds continues throughout the target VOC list, with MW-1 and MW-3 generally containing nondetect or low levels of compounds and MW-3 containing the higher concentrations.

Toluene is the only compound that occurs in all three monitoring wells and at the up- or offgradient piezometer (P-3).

VOCs from the soil TCL detected in MW-2, in addition to toluene, include trichlorotrifluoroethane (5.5 mg/l); 1,1,1-trichloroethane (2.5 mg/l); trichloroethane (16 mg/lg); and tetrachloroethene (0.44 mg/l). Of these compounds, only trichloroethene (0.057 mg/l) occurred in MW-1. Other VOCs which are part of the 8240 method list detected in MW-2 are summarized in Table 2.

The semivolatile compounds in the ground water did not show a similar distribution to the VOCs. However, the relative concentrations of compounds between the monitoirng wells were similar, with MW-1 containing the lowest concentrations of SVOCs and MW-2 containing the highest. Semivolatiles on the special compound list detected in the three monitoring wells include B-picoline (2.7, 290, 4.6 mg/l); N,N-dimethylacetamide (0.18, 850, 22 mg/l); and 1-methyl-2-pyrolidinone (0.11, 12, 0.16 mg/l). (The concentrations are listed in order of MW-1, MW-2, and MW-3.) Pyridine is only detected in MW-2 at concentrations of 2.5 mg/l. No other compounds from the standard 8270 method list semivolatiles were detected in any of the ground water samples.

Based on these data, it appears that the tank farm may be the source of some of the ground water VOC impacts and a limited number of SVOC impacts. Importantly, no SVOCs off the standard 8270 TCL appear in the ground water at the site. Again, the company has some concern that sources other than the closure units may be affecting ground water quality. Safety-Kleen believes it is important to restrict any ground water quality evaluations to those associated with former Tanks T-190 through T-193.

4.0 SUMMARY AND FUTURE ACTION ITEMS

The ground water investigation was completed in accordance with the conditions contained in the IEPA August 30, 1991 modified closure plan approval letter.

Three monitoring wells were installed. The fourth well location originally designated (at the northeast corner of Tank Farm No. 2) is underlain by an old granite cobblestone roadway. After five attempts to penetrate the cobblestones in various areas near the location, it was decided to abandon the attempt, review the available ground water data, select a new location, and install the fourth well at a later date.

Reference data indicate that the use of ground water in the Chicago area is fairly minimal and most potable water is obtained from surface water (primarily Lake Michigan) supplies. Current maps do not indicate the presence of any extraction wells in the vicinity of the Chicago Recycle Center Site. Therefore, ground water usage in the area surrounding the site appears minimal. Any impacts to the shallow ground water are not likely to be a health hazard in the predominantly industrialized area.

A regional flow of shallow ground water towards the north or northeast is assumed based on the proximity of the Chicago Ship Canal and surface topography. Shallow ground water flow at the site is influenced by the highly variable geology of the surficial fill/soil. The site geology is complicated by unmapped building footings, buried roads, truck bays, and various layers of concrete slabs, all of which influence the shallow ground water flow. Ground water flow at the site is also complicated by the numerous stormwater collection sumps that will also exert an effect on the flow direction(s).

Current site ground water data indicate an easterly flow from the tank farm area. However, the contours on Figure 2 mask the presence of a ground water mound within the old tank farm. Ground water depths outside the tank range from 2-1/2 to 6 feet below grade. RMT data indicate that the water depth within the tank farm area is one

foot or less. This mounding will result from the tank farm dike footings and silty clay [low permeability 4.5×10^{-10} cm/sec to 4.5×10^{-4} cm/sec (Linsley and Franzini)] restricting the flow of any stormwater recharge out of the tank farm area.

Safety-Kleen proposes to install a fourth monitoring well (MW-4) in the vicinity of the southwest corner of Tank Farm No. 2. This well will provide more data on the apparent easterly flowing ground water and will confirm the water level data for MW-1. Samples of soil obtained from this new well will be used for grain-size and permeability tests to further enhance the site data on this shallow silty/clay sediment.

Ground water data provided by the RMT study indicated a difference in ground water quality between the piezometer (P-1) in the tank farm and the piezometers located outside the tank farm (P-2, P-3, and P-4). Recent ground water data for volatiles support these data, as a fairly clear pattern emerges of ground water impacts near the tank farm (MW-2) containing different parameters than the ground water obtained from the wells located further from the tank farm. Toluene, however, appears to occur in ground water samples from throughout the monitored area and may be a regional problem.

Semivolatile data for the target list compounds do not show the same pattern as the VOCs. With the exception of pyridine, all the SVOC compounds are detected in the three monitoring well samples. However, concentrations decrease significantly as distance from MW-2 (and the tank farm) increases. RMT did not analyze the piezometer ground water samples for SVOCs; therefore, data for the area south of the tank farm do not exist.

Based on the preceding data, Safety-Kleen intends to initiate the following actions to further evaluate the ground water quality at this site.

1. Install the new Monitoring Well MW-4 in the location shown on Figure 2. Well installation will be in accordance with the procedures set forth in the EPA guidance.

2. Future ground water samples will be submitted for the following analyses and parameters based on the current ground water analytical results.

Method 8240	Method 8270
Vinyl Chloride	Pyridine
Chloroethane	B-Picoline
Carbon Disulfide	N,N-Dimethylacetamide
1,1-Dichloroethene	1-Methyl-2-Pyrolidinane
1,1-Dichloroethane	
1,2-Dichloroethene (total)	
Chloroform	
2-Butanone	
1,1,1-Trichloroethane	
Carbon Tetrachloride	
Trichloroethene	
Benzene	
Tetrachloroethane	
Toluene	
Ethylbenzene	
Xylene	
Trichlorotriofluoroethane	
Tetrahydrofuran	

All of these compounds have been detected in one or more of the wells at the site. This target list may be reduced if further sampling indicates the presence of some of these compounds to be insignificant.

3. Safety-Kleen will initially perform four quarters of ground water sampling and analysis from the four monitoring wells. Ground water flow data will also be collected during each monitoring event. The frequency of subsequent monitoring events will be reviewed after the first year of data has been collected.

4. During the Supplemental Investigation, Safety-Kleen installed two 10-inch-diameter recovery wells in former tank Areas T-190 and T-192 for possible use as product recovery wells. If free product is present in these wells, product recovery wells will be installed. The product recovered will be collected and recycled at the Chicago facility.

5. Safety-Kleen will obtain soil samples from MW-4 suitable for determining grain-size distribution in the silty clay. Also, obtain Shelby tube samples suitable for determining the permeability of the clay underlying the silty clay will be obtained.

6. Safety-Kleen will conduct slug tests on MW-2 and MW-3 to determine lateral hydraulic conductivity of the silty clay in the vicinity of the tank farm area.

7. Until more information is available regarding the site water quality and flow regimes, Safety-Kleen does not plan to advance any wells into deeper water-bearing zones. This action will preserve the integrity of the clay seal underlying the site and thus protect the underlying aquifers.

8. Based on data obtained from the previous action items and based on the data from the current investigation, Safety-Kleen will establish the compliance boundary for monitoring ground water quality. This boundary should be as close as feasible to the closed tank farm (No. 3) because of complex site hydrogeology and the proximity of other solid waste management units and active plant areas. Based on current data, MW-1, MW-2, and MW-3 are reasonably placed to form this boundary. The proposed location of MW-4 is designed to enhance monitoring of this boundary.

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TABLE 1

WATER ELEVATION SUMMARY
SAFETY-KLEEN CORP.
CHICAGO RECYCLE CENTER

Location	Ground Elevation	Top-of-Casing Elevation	Water Elevation 10/22/91	Water Elevation 11/7/91
MW-1	594.08	594.02	NI	588.22
MW-2	594.19	593.87	NI	591.75
MW-3	593.36	593.21	NI	590.48
P-2	593.25	594.82	591.92	591.47
P-3	593.19	595.02	592.08	591.35
P-4	593.54	594.84	592.44	590.69

Note: NI = Not installed.

TABLE 2

GROUND WATER RESULTS SUMMARY
VOLATILE ORGANIC COMPOUNDS
SAFETY-KLEEN CORP.
CHICAGO RECYCLE CENTER

Volatiles	MW-1 (mg/l)	MW-2 (mg/l)	MW-3 (mg/l)
Vinyl Chloride	1.1	0.26	ND
Chloroethane	1.9	ND	ND
Methylene Chloride	0.15	12	ND
Acetone	0.13	4.7	0.23
Carbon Disulfide	ND	0.75	ND
1,1-Dichloroethene	ND	0.26	ND
1,1-Dichloroethane	0.1	0.46	ND
1,2-Dichloroethene(total)	1.1	3.9	ND
Chloroform	ND	54	ND
2-Butanone	ND	0.7	ND
1,1,1-Trichloroethane	BDL	2.5	ND
Carbon Tetrachloride	ND	0.98	ND
Trichloroethene	0.057	16	ND
Benzene	0.48	8.1	7
Tetrachloroethane	ND	0.44	ND
Toluene	0.53	300	1.8
Ethylbenzene	ND	0.3	ND
Xylene	ND	2	ND
Trichlorotrifluoroethane	ND	4.2	ND
Tetrahydrofuran	2.1	ND	3

Notes:
ND - Nondetectable
BDL - Below detection limits

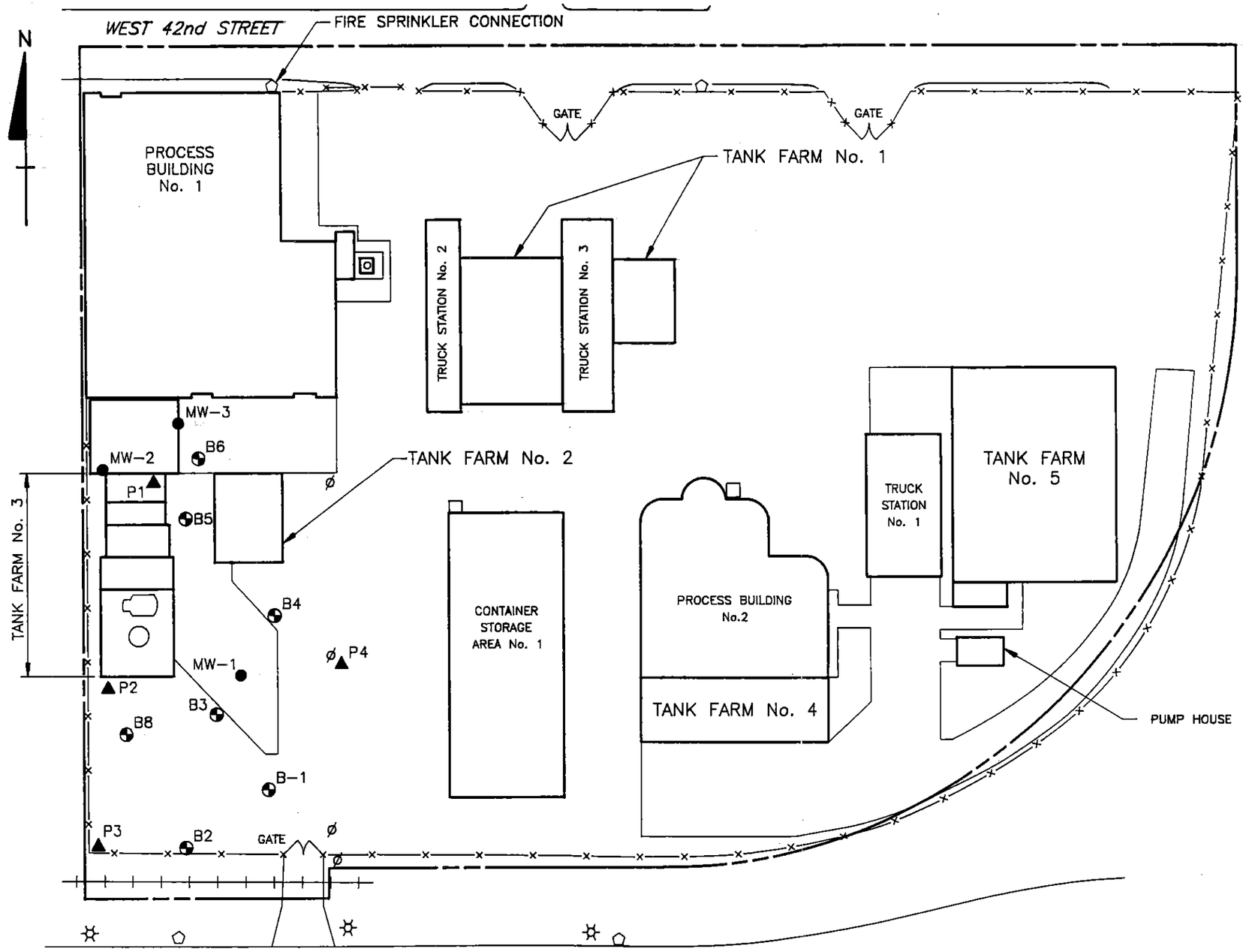
TABLE 3

GROUND WATER RESULTS SUMMARY
SEMIVOLATILE ORGANIC COMPOUNDS
SAFETY-KLEEN CORP.
CHICAGO RECYCLE CENTER

Semivolatiles	MW-1 (mg/l)	MW-2 (mg/l)	MW-3 (mg/l)
Pyridine	BDL	2.4	BDL
3-Picoline	2.7	290	4.6
N,N-Dimethylacetamide	0.18	850	22
1-Methyl-2-pyrrolidinone	0.11	12	0.16

Note: BDL - Below detection limits

DRAWING NUMBER 90-280-B5



LEGEND:

- PROPERTY LINE
- FENCE
- RAILROAD
- UTILITY POLE
- LIGHT POLE
- FIRE HYDRANT
- B3 — SOIL BORING
- MW-1 — MONITORING WELL
- P1 — PIEZOMETER

APPROXIMATE SCALE

60 0 60 FEET

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
2	12-6-91	ISSUED TO CLIENT AND AGENCY	GWB	TJA	PWL
1	12-5-91	ISSUED FOR REVIEW	SAK	TJA	PWL

REFERENCES:
- SAFETY KLEEN CORP., ELGIN ILLINOIS, DRAWING 88-62000-00, DATED 1987 REVISION 0.

SOIL BORING AND MONITORING WELL LOCATION PLAN
CHICAGO RECYCLE CENTER
CHICAGO, ILLINOIS

PREPARED FOR
SAFETY-KLEEN CORP.

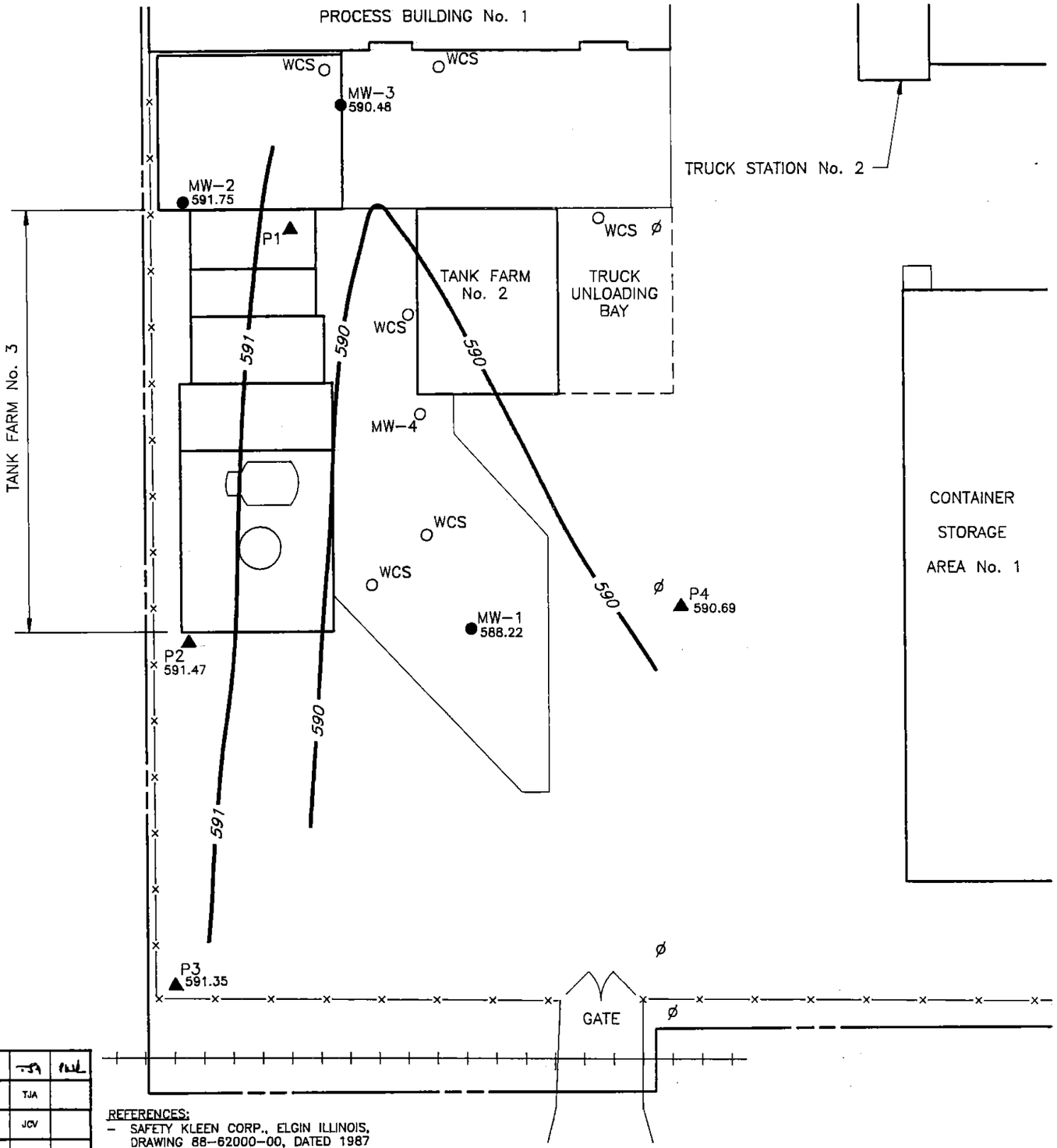
CanonieEnvironmental

DATE: 11-17-91	FIGURE 1	DRAWING NUMBER 90-280-B5
SCALE: AS SHOWN		

2

DRAWING NUMBER 90-280-B6

N



LEGEND:

- PROPERTY LINE
- FENCE
- RAILROAD
- Ø UTILITY POLE
- MW-4 PROPOSED MONITORING WELL
- MW-1 MONITORING WELL
- P1 PIEZOMETER
- WCS WATER COLLECTION SUMP (SEE NOTE 1)
- 591 PIEZOMETRIC SURFACE CONTOUR (MSL, FEET)
- 591.35 PIEZOMETRIC SURFACE ELEVATION (MSL, FEET)

NOTES:

1. WATER COLLECTION SUMPS ARE SHOWN IN APPROXIMATE LOCATIONS.

APPROXIMATE SCALE

30 0 30 FEET

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
3	12-6-91	ISSUED TO CLIENT AND AGENCY	GWB		
2	12-5-91	ISSUED FOR REVIEW	SAK	TJA	
1	12-3-91	ISSUED FOR REVIEW	DRE	JCV	

REFERENCES:
- SAFETY KLEEN CORP., ELGIN ILLINOIS, DRAWING 88-62000-00, DATED 1987 REVISION 0.

PIEZOMETRIC SURFACE MAP
CHICAGO RECYCLE CENTER
CHICAGO, ILLINOIS

PREPARED FOR

SAFETY-KLEEN CORP.

CanonieEnvironmental

DATE: 11-22-91	FIGURE 2	DRAWING NUMBER 90-280-B6
SCALE: AS SHOWN		

3

APPENDIX A

SOIL BORING LOGS

Canonie

BORING LOG

PROJECT No. 90-280-12
BORING No. B-1
LOGGED BY TJA/JAH
PAGE No. 1 of 1

PROJECT NAME Safety-Kleen Corp. - Chicago Recycle Center
BORING LOCATION B-1 Southwest/near power pole SURFACE ELEVATION 593.49
DRILLER Fox Drilling Company DATE: START 10/22/91 FINISH 10/22/91

DEPTH	SAMPLE No.	SAMPLE TYPE	SAMPLE INTERVAL FROM	SAMPLE INTERVAL TO	BLOW COUNT 0" 6"	BLOW COUNT 6" 12"	BLOW COUNT 12" 18"	REC (in)	USCS SOIL TYPE	OVA (ppm)	qu (TSF)	LAYER DEPTH	SOIL DESCRIPTION AND REMARKS	PIEZO
			0.0		60								No Recovery - Fill Coarse Limestone Aggregate.	
	1	SS		2.0				0					Refusal At 60 Blows for 6-In.	
			2.0										No Samples Obtained. Hit Rock	
	2	SS		4.0	5			6				4.0	Refusal After 6-In.	
5			4.0		4	4	3						Black/Dark Grey Clay. Organic Odor.	
	3	SS		6.0	5			20	CL	450			Slightly Wet. Fill Materials Also.	
			6.0		6	8	14							
	4	SS		8.0	12			24	CL/ML	90		8.0	A/A Very Wet - Still Organic Smell.	
			8.0		6	6	10						Silty Clay - Mottled.	
10	5	SS		10.0	16			22	SM/ML	30		10.0	Very Fine Grained Sand Or Silt - Grey. Wet And Flowing. Grains Clear Or White.	
													End Of Boring At 10 Ft. Clay Layer Approximately 4 Ft. Thick. Silt Below.	
15													Boring Grouted Back To Surface Using Hydrated Bentonite Chips. Concrete Surface Seal 1 Ft. Thick.	

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BORING LOG

PROJECT No. 90-280
BORING No. B-2
LOGGED BY TJA/JAH
PAGE No. 1 of 1

PROJECT NAME Safety-Kleen Corp. - Chicago Recycle Center
BORING LOCATION B-2 North Fence Line South Of TF #3 SURFACE ELEVATION 593.67
DRILLER Fox Drilling Company DATE: START 10/22/91 FINISH 10/22/91

DEPTH	SAMPLE No.	SAMPLE TYPE	INTERVAL FROM	INTERVAL TO	BLOW COUNT 0"	BLOW COUNT 6"	BLOW COUNT 12"	REC (In)	USCS SOIL TYPE	OVA (ppm)	qu (TSF)	LAYER DEPTH	SOIL DESCRIPTION AND REMARKS	PIEZO
			0.0										No Sample 0-2-In.	
	1	SS		2.0										
			2.0		40	18	60	12		1.8			Refusal At 16-In. Sand, Gravel - Variable Fill	
	2	SS		4.0									Materials - Moist.	
5			4.0		20	60	-	6	SM	340.0			A/A Somewhat More Sandy - Wet. Strong	
	3	SS		6.0	-								Organic Vapor. Refusal After 6-In.	
			6.0		9	10	10					7.0		
	4	SS		8.0	12			18	ML	10.0			Silt Grey/Brown, Mottled, Organic (Black)	
			8.0		5	7	9						Inclusions. Moist/Wet.	
10	5	SS		10.0	10			20	ML	5.2		10.0	Wet Silt As Above. Flowed Out Of SS.	
													Traces Fine Gravel.	
													End of Boring At 10 Ft.	
15													Borehold Grouted Using Hydrated Bentonite Chips	
													And 1 Ft. Concrete Surface Seal.	

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BORING LOG

PROJECT No. 90-280
BORING No. B-3
LOGGED BY TJA/JAH
PAGE No. 1 of 1

PROJECT NAME Safety-Kleen Corp. - C.R.C.
BORING LOCATION B-3 Adjacent To Concrete Pad SURFACE ELEVATION 594.44
DRILLER Fox Drilling Company DATE: START 10/23/91 FINISH 10/23/91

DEPTH	SAMPLE No.	SAMPLE TYPE	INTERVAL FROM	INTERVAL TO	BLOW COUNT 0" 6"	BLOW COUNT 6" 12"	BLOW COUNT 12" 18"	REC (in)	USCS SOIL TYPE	OVA (ppm)	qu (TSF)	LAYER DEPTH	SOIL DESCRIPTION AND REMARKS	PIEZO
			0.0		-	-	-						Concrete And Rubble Logged Off Auger Cuttings 1-1/2-in., Rubble 6-In. concrete Footing. Fill Materials Mainly Sand And Fine Gravel.	
	1	AR		2.0	-									
			2.0		3	3	3							
	2			4.0	3			6		2.8		4.0	Brown To Black. Some Brick Fragments. Hit Cavity. Black Wet Staining. Silty Clay.	
5			4.0		7	4	4							
	3			6.0	7			12	CL/ML	36			Grey, Brown Mottled. Sand Lens Was Filled With Black Water.	
			6.0		6	11	13							
	4			8.0	19			22	ML/CL	100			Silty/Clayey Silt. Grey/Pink Brown. Moist Organic Odor. Mottled With Redish Brown Spots.	
			8.0		12	12	10							
10	5			10.0	14			20	ML	100		10.0	Wet Seam AT 8-9 Ft. 9-10 Ft. As Before. Stiff Brown Clay At 10 Ft.	
			10.0		7	14	19							
	6			12.0	24			24	CL	15		12.0	Hard Brown/Grey Clay. Slightly Silty. Some Pink/Brown Staining. Higher OVA Readings Associated With Wet Silt Trapped In SS From Above.	
15														
													End of Boring At 12 Ft.	
													Grouted Using Hydrated Bentonite Chips and 1 Ft. Concrete Surface Sea.	

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BORING LOG

PROJECT No. 90-280
BORING No. B-4
LOGGED BY TJA/JAH
PAGE No. 1 of 1

PROJECT NAME Safety-Kleen Corp. - CRC
BORING LOCATION B-4 South Of TF #2 SURFACE ELEVATION 593.74
DRILLER Fox Drilling Company DATE: START 10/23/91 FINISH 10/23/91

DEPTH	SAMPLE No.	SAMPLE TYPE	SAMPLE INTERVAL FROM	SAMPLE INTERVAL TO	BLOW COUNT 0" 6"	BLOW COUNT 6" 12"	BLOW COUNT 12" 18"	REC (in)	USCS SOIL TYPE	OVA (ppm)	qu (TSF)	LAYER DEPTH	SOIL DESCRIPTION AND REMARKS	PIEZO
													Limestone Aggregate And Fill Logged Off	
	1			2.0								2.0	Augers. Black Soil/Sand At Last 6 Ft.	
			2.0		5	4	4	18	ML	10			Clayey/Silt, Dry/Moist, Increasing Silt	
	2			4.0	5								Content at 4 Ft.	
5			4.0		3	3	60	12	ML/CL	10			A/A More Rocks, Moist. Strong Organic Odor.	
	3			6.0	-								6-7 Ft. Cavity. Wet Clayey Silt. Brown/Grey.	
			6.0		-	-	3						Strong Organic Odor. Some Black Staining	
	4			8.0	8			22	ML	1000				
			8.0		5	4	7					9.0		
10	5			10.0	14			24	CL	15			Hard Clay/Silty. Light Grey/Brown. Traces	
			10.0		4	7	11						Of Gravel. Sl Moist/Dry.	
	6			12.0	12			22	CL	*				
			12.0		4	7	10							
	7			14.0	13			18	CL	*				
15			14.0		4	7	12							
	8			16.0	15			20	CL	*			A/A Dry	
			16.0		5	7	11							
	9			18.0	17			16	CL	*				
			18.0		5	10	13							
20	10			20.0	17			16	CL	*			A/A	
												20.0		
													End Of Boring At 20 Ft.	
25														
													* OVA Not Working 12 to 20 Ft. Replacement	
													Arrived After Boring Completed. All Samples	
													From These Zones Submitted For Analysis.	
													Borehold Grouted Using Hydrated Bentonite Chips	
													And 1 Ft. Concrete Surface Seal.	

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BORING LOG

PROJECT No. 90-280
BORING No. B-5
LOGGED BY TJA/JAH
PAGE No. 1 of 1

PROJECT NAME Safety-Kleen Corp. - CRC
BORING LOCATION B-4 Between TF # 3 And TF #2 SURFACE ELEVATION 594.31
DRILLER Fox Drilling Company DATE: START 10/23/91 FINISH 10/23/91

DEPTH	SAMPLE No.	SAMPLE TYPE	INTERVAL FROM	INTERVAL TO	BLOW COUNT 0" to 6"	BLOW COUNT 6" to 12"	BLOW COUNT 12" to 18"	REC (in)	USCS SOIL TYPE	OVA (ppm)	qu (TSF)	LAYER DEPTH	SOIL DESCRIPTION AND REMARKS	PIEZO
			0.0									1.0	Concrete 1 Ft.	
	1	SS		2.0									No Sample	
			2.0		-	4	4						Fill And Sand. Yellow/Brown, With Black Staining	
	2	SS		4.0	6			18		1000		3.5	Strong Organic Odor. Sl Moist.	
5			4.0		5	4	5						Silt, Some Black Staining. Strong Organic Odor.	
	3	SS		6.0	10			24	ML/CL	1000			Silt. Brown/Grey, Strong Organic Odor, Moist	
			6.0		7	9	11						Traces Clay.	
	4	SS		8.0	14			24		1000			Silty Clay, Brown/Grey, Very Strong Organic	
			8.0		6	7	8						Odor, Sl Moist. Non-Plastic. Stiff/Very Stiff.	
10	5	SS		10.0	10			24	CL/ML	1000				
			10.0		5	10	17					11.0		
	6	SS		12.0	22			24	CL	600			Stiff, Brown Clay, Wet, Yellow Mottles.	
												12.0		
15													End Of Boring At 12 Ft.	
													Borehold Grouted Using Hydrated Bentonite Chips And 1 Ft. Concrete Surface Seal.	

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BORING LOG

PROJECT No. 90-280
BORING No. B-6
LOGGED BY TJA
PAGE No. 1 of 1

PROJECT NAME Safety-Kleen Corp. - Chicago Recycle Center
BORING LOCATION B-6 Between TF#2 And TF#3 North End SURFACE ELEVATION 593.52
DRILLER Fox Drilling Company DATE: START 10/23/91 FINISH 10/23/91

DEPTH	SAMPLE No.	SAMPLE TYPE	INTERVAL FROM	INTERVAL TO	BLOW COUNT 0" 6"	BLOW COUNT 6" 12"	BLOW COUNT 12" 18"	REC (in)	USCS SOIL TYPE	OVA (ppm)	qu (TSF)	LAYER DEPTH	SOIL DESCRIPTION AND REMARKS	PIEZO
			0.0										Concrete And Gravel Fill.	
	1			2.0									Refusal After 6 Inches. Fill, Gravel, Sand. Black	
			2.0		2	R	R	6	FILL	400			Staining, Organic Odor.	
	2			4.0	R								A/A Silt And Strong Odor.	
5					4	6	9					5.0		
	3			6.0	14			22		1000			Gray, Silt/Clay, Moist, OVA Was Lightest At Top	
			6.0		3	4	10		CL/ML				In Zone Above. Silt Layer 550 ppm.	
	4			8.0	15			22		1000			AA But More Black Staining.	
					9	9	12					9.0	A/A Less Stained.	
10				10.0	21			24	CL/ML	150		10.0	Brown/Grey Silty Clay, Some Yellow Sand, Trace Gravel Inclusions. Very Stiff/Stiff.	
15													End Of Boring At 10 Ft.	
													Grouted Using Hydrated Bentonite Chips And 1 Ft. Concrete Surface Seal.	

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BORING LOG

PROJECT No. 90-280
BORING No. B-8
LOGGED BY TJA
PAGE No. 1 of 1

PROJECT NAME Safety-Kleen Corp. - CRC
BORING LOCATION B-8 Due South Of TF#3 SURFACE ELEVATION 593.36
DRILLER Fox Drilling Company DATE: START 10/23/91 FINISH 10/23/91

DEPTH	SAMPLE No.	SAMPLE TYPE	INTERVAL FROM	INTERVAL TO	BLOW COUNT 0"-6"	BLOW COUNT 6"-12"	BLOW COUNT 12"-18"	REC (in)	USCS SOIL TYPE	OVA (ppm)	qu (TSF)	LAYER DEPTH	SOIL DESCRIPTION AND REMARKS	PIEZO
			0.0									1.0	Concrete	
	1			2.0									Brown/Grey Clayey Silt. Black Staining	
			2.0		3	4	6		CL/ML	100			Strong Organic Odor. Moist. Med. Stiff.	
	2			4.0	12					400				
5			4.0		11	12	13		CL/ML				Silt As Above. Grey. Brown/Yellow Mottling. Moist.	
	3			6.0	17					300				
			6.0		7	6	3		CL			7.0		
	4			8.0	7							8.0	Medium Stiff Clay. Grey With Some Brown	
			8.0		3	11	10		ML	1000		9.0	Staining. Moist. Sl silty.	
10	5			10.0	16				CL/ML				Silt Seam - Moist.	
												10.0	Clay Some Silt. Grey/Brown Yellow Staining	
													Moist Stiff/Very Stiff.	
15													End Boring At 10 Ft.	
													Borehole Grouted Using Hydrated Bentonite Chips.	

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BORING LOG

PROJECT No. 90-280
BORING No. MW-1
LOGGED BY TJA
PAGE No. 1 of 1

PROJECT NAME Safety-Kleen Corp. - CRC
BORING LOCATION MW-1 South Of TF#2 SURFACE ELEVATION 594.02 (TOC)
DRILLER Fox Drilling Company DATE: START 10/23/91 FINISH 10/23/91

DEPTH	SAMPLE No.	SAMPLE TYPE	SAMPLE INTERVAL FROM	SAMPLE INTERVAL TO	BLOW COUNT 0" 6"	BLOW COUNT 6" 12"	BLOW COUNT 12" 18"	REC (in)	USCS SOIL TYPE	OVA (ppm)	qu (TSF)	LAYER DEPTH	SOIL DESCRIPTION AND REMARKS	PIEZO
			0.0		100	-	-						Concrete 2-1/2 Ft.	
	1			2.0	-								Smells Of Mineral Spirits.	
			2.0		-	-	-						Not Sampled..	
	2			4.0	-								Grey/Brown Silt. Strong Organic Odor.	
5			4.0		4	6	11	18	ML	140		4.0	Mottled With Yellow Spots. SI Moist.	
	3			6.0	16									
			6.0		9	10	12							
	4			8.0	12			20	ML	1000				
			8.0		9	9	7					9.0		
10	5			10.0	8			24	CL	460			Grey Brown, Silty Clay, Strong Organic Odor.	
												10.0		
													End Boring At 10 Ft.	
15													Stainless Steel Well Installed At 9 Ft. See Well Construction Details.	

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BORING LOG

PROJECT No. 90-280
BORING No. MW-2
LOGGED BY TJA
PAGE No. 1 of 1

PROJECT NAME Safety-Kleen Corp. - CRC
BORING LOCATION MW-2 North And West Of TF#3 SURFACE ELEVATION 593.87 (TOC)
DRILLER Fox Drilling Company DATE: START 10/24/91 FINISH 10/24/91

DEPTH	SAMPLE No.	SAMPLE TYPE	SAMPLE INTERVAL FROM	SAMPLE INTERVAL TO	BLOW COUNT 0" 6"	BLOW COUNT 6" 12"	BLOW COUNT 12" 18"	REC (in)	USCS SOIL TYPE	OVA (ppm)	qu (TSF)	LAYER DEPTH	SOIL DESCRIPTION AND REMARKS	PIEZO
			0.0										Concrete And Fill Cored.	
	1			2.0										
			2.0											
	2			4.0								4.0	No Samples.	
5			4.0		34	5	3						Sand Fill Materials, Strong Organic Odor.	
	3			6.0	2			12	Fill	1000		6.0	Sand And Concrete Fragments.	
			6.0		2	2	6						Black/Dark Brown Silt, Some Clay, Moist/Wet	
	4			8.0	7			22	ML	1000			Black Staining In Places.	
			8.0		4	4	11							
10	5			10.0	15			22	CL/ML	400		10.0	A/A	
			10.0		4	7	15						Silty clay. Brown/Dark Grey, Organic Odor	
	6			12.0	20			18	CL	300			Moist, Stiff/Very Stiff.	
												12.0	A/A Very Stiff, Slightly Silty.	
15														
													End Of Boring At 12 Ft.	
													Well Screen Set At 10 Ft.	

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Canonie

BORING LOG

PROJECT No. 90-280
BORING No. MW-3
LOGGED BY TJA
PAGE No. 1 of 1

PROJECT NAME Safety-Kleen Corp. - CRC
BORING LOCATION MW-3 North Of TF#3 Near Process Bldg. SURFACE ELEVATION 593.21 (TOC)
DRILLER Fox Drilling Company DATE: START 10/25/91 FINISH 10/25/91

DEPTH	SAMPLE No.	SAMPLE TYPE	INTERVAL FROM	INTERVAL TO	BLOW COUNT 0" 6"	BLOW COUNT 6" 12"	BLOW COUNT 12" 18"	REC (in)	USCS SOIL TYPE	OVA (ppm)	qu (TSF)	LAYER DEPTH	SOIL DESCRIPTION AND REMARKS	PIEZO
			0.0										Concrete 1 Ft.	
	1			2.0								2.0	Not Sampled - Gravel And Concrete.	
			2.0		3	2	2	12		800			Fill, Wood Fragments, Sand Misc. Black	
	2			4.0	4								Staining, Strong Organic Odor Wet.	
5			4.0		2	2	4							
	3			6.0	19			12		1000		6.0	A/A Lots Of Wood, And Black Staining. Wet.	
			6.0		R	R	R						No Sample.	
	4			8.0	R			0				8.0		
			8.0		10	18	28						Grey/Brown; Silt/Clayey Silt/ Organic Odor;	
10	5			10.0	27			18	ML/CL	1000			Yellow Mottling; Very Stiff.	
			10.0		9	17	25							
	6			12.0	26			18	CL/ML	450			A/A. SI Plastic.	
												12.0		
15													End Of Boring At 12 Ft.	
													Well Screen Set At 10 Ft.	
													See Well Construction Details.	

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APPENDIX B

MONITORING WELL DETAILS

Canonie

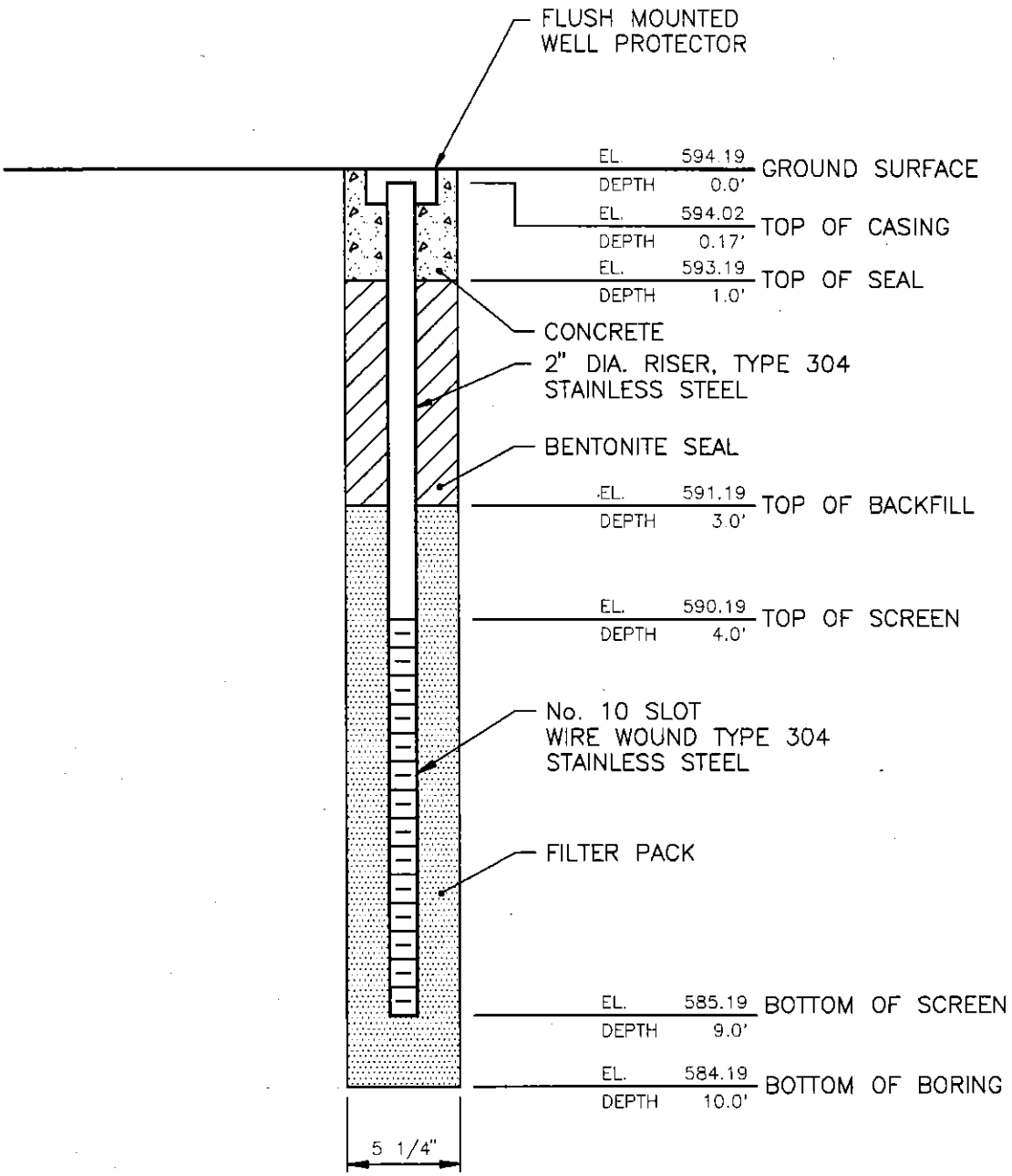
Monitoring Well Details

PROJECT No. 90-280-12

WELL No. MW-1

PROJECT NAME SAFETY KLEEN - CHICAGO RECYCLE CENTER

WELL LOCATION SEE DRAWING 90-280-B5 DATE 10-26-91 BY TJA



NOTES:

1. NOT DRAWN TO SCALE.
2. SEE BORING LOG MW-1 FOR DETAILED SOIL DESCRIPTION.

Canonie

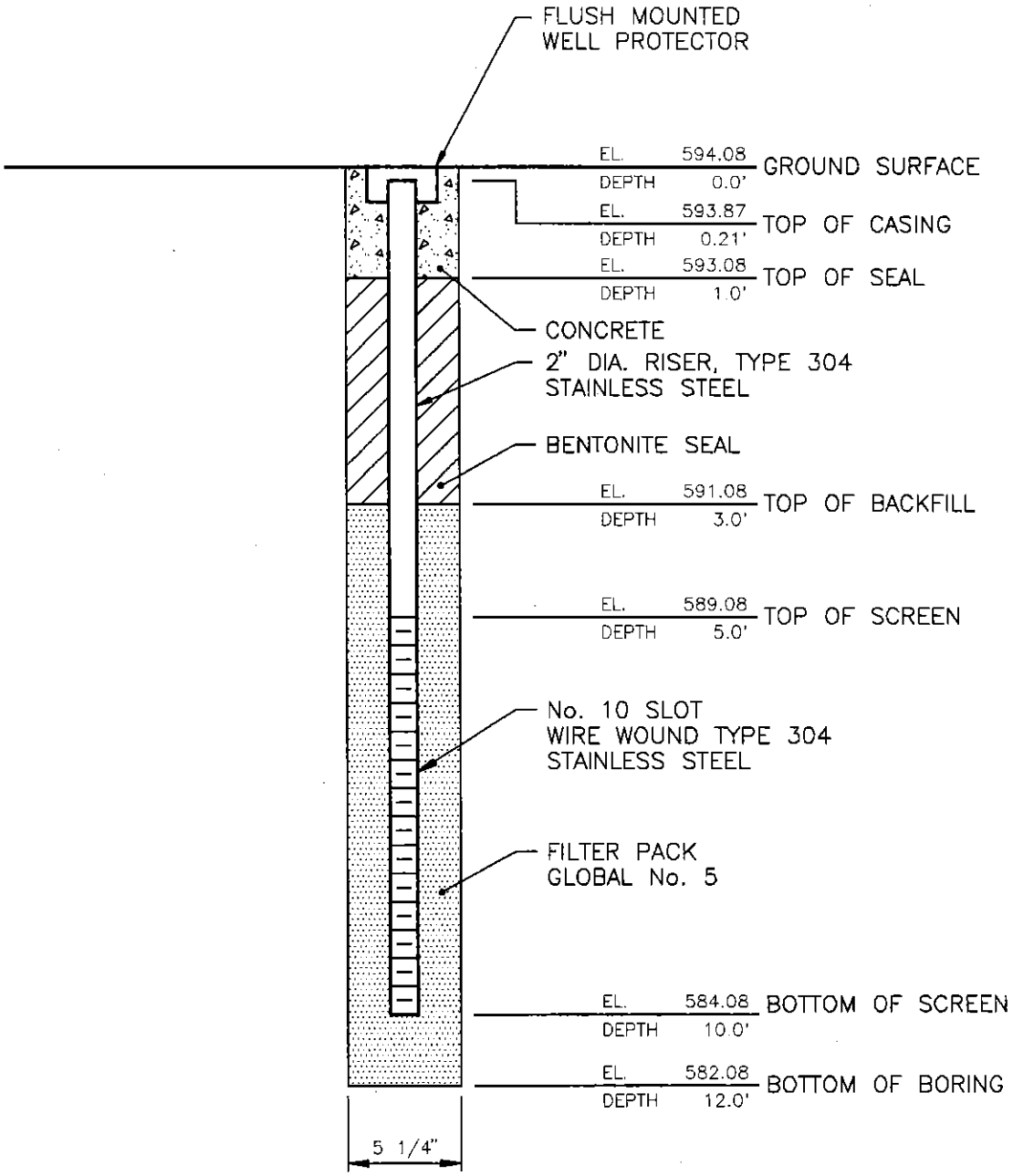
Monitoring Well Details

PROJECT No. 90-280-12

WELL No. MW-2

PROJECT NAME SAFETY KLEEN - CHICAGO RECYCLE CENTER

WELL LOCATION SEE DRAWING 90-280-B5 DATE 10-24-91 BY TJA



NOTES:

1. NOT DRAWN TO SCALE.
2. SEE BORING LOG MW-2 FOR DETAILED SOIL DESCRIPTION.

Canonie

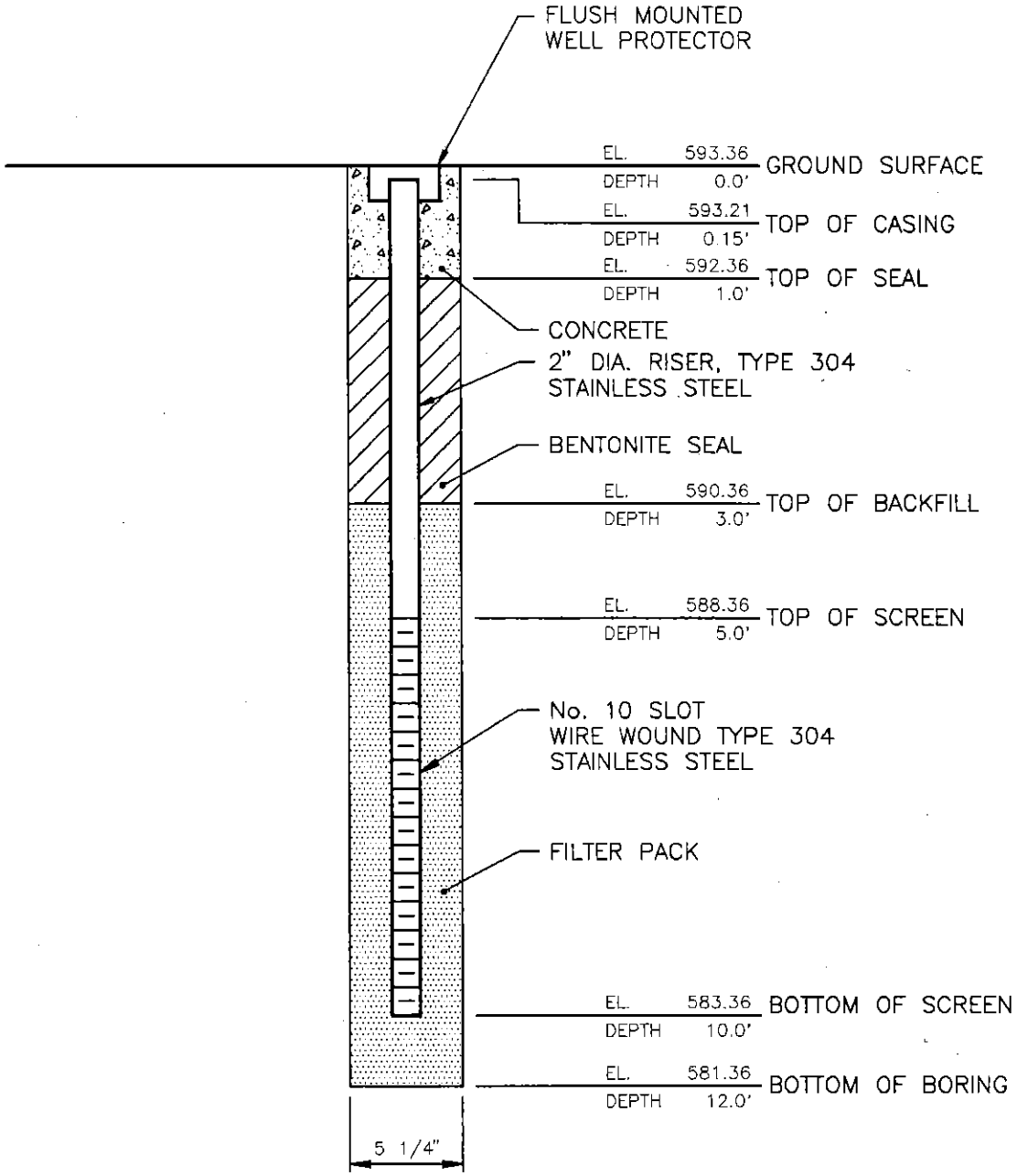
Monitoring Well Details

PROJECT No. 90-280-12

WELL No. MW-3

PROJECT NAME SAFETY KLEEN - CHICAGO RECYCLE CENTER

WELL LOCATION SEE DRAWING 90-280-B5 DATE 10-25-91 BY TJA



NOTES:

1. NOT DRAWN TO SCALE.
2. SEE BORING LOG MW-3 FOR DETAILED SOIL DESCRIPTION.

APPENDIX C

GROUND WATER ANALYTICAL RESULTS

WESTON-GULF COAST LABORATORIES, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533

December 5, 1991

Mr. Terry Ashworth
Canonie Environmental
800 Canonie Drive
Porter Drive
Porter, IN 46304

Dear Mr. Ashworth:

Please find enclosed the VOA and BNA analytical reports for the samples submitted to Weston/Gulf Coast Laboratories for analysis. They have been identified as follows:

Project: Canonie - Safety Kleen

Lab ID: 9111G711

The compound lists for the above reports have been amended per your request.

If you have any questions, please contact our laboratories.

Sincerely,

WESTON/GULF COAST LABORATORIES

Michael J. Healy
Laboratory Manager

Eric A. Lang
Project Manager

jvb

Enclosures

WESTON

DATA QUALIFIERS

B - Indicates the compound was found in the blank and the sample.

E - Concentrations exceed calibration range of the instrument.

I - Indicates Interference.

J - Indicates an estimated value for either a TIC or an analyte that meets the identification criteria but the result is less than the specified detection limit.

T - Indicates the compound was found in the TCLP extraction blank and the sample.

u - Indicates an inorganic compound was analyzed for but not detected.

U - Indicates an organic compound was analyzed for but not detected.

BS - Indicates matrix analyses were conducted on reagent grade water.

BSD - Blank Spike Duplicate

BDL - Below Detection Limit

D - Indicates that surrogate/matrix spike recoveries were not obtained because the extract had to be diluted for analysis.

DL - Indicates a secondary dilution

DF - Dilution factor

LCS - Laboratory Control Sample

MB - Method Blank

MS - Matrix Spike

MSD - Matrix Spike Duplicate

NA - Not Applicable

X - Result is by calculation

NOTES:

Solid, sediment and sludge results are reported on a dry weight basis except when analyzed for Landfill disposal parameters (such as incineration or Illinois Green Sheet parameters). All other mg/kg results are reported on an "as received" basis.

Reporting limits are detection limits adjusted for sample size used, dilutions made, and in the case of dry weight results, the moisture content of the sample.

Revised 04/05/91

Roy F. Weston, Inc. - Gulf Coast Laboratories
VOA ANALYTICAL DATA PACKAGE FOR
Canonie Environmental

LABORATORY CHRONICLE
DATE RECEIVED: 11/08/91 RFW LOT # :9111G711

CLIENT ID	RFW #		MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MW-1	001		W	91GVE362	11/07/91	N/A	11/20/91
MW-1	001	D1	W	91GVE276	11/07/91	N/A	11/15/91
MW-2	002		W	91GVE276	11/07/91	N/A	11/15/91
MW-2	002	D1	W	91GVE362	11/07/91	N/A	11/20/91
MW-2	002	D2	W	91GVE362	11/07/91	N/A	11/20/91
MW-3	003		W	91GVE362	11/07/91	N/A	11/20/91
Duplicate	004		W	91GVE362	11/07/91	N/A	11/20/91
Duplicate	004	MS	W	91GVE362	11/07/91	N/A	11/20/91
Duplicate	004	MSD	W	91GVE362	11/07/91	N/A	11/20/91
Trip Blank	005		W	91GVE276	11/01/91	N/A	11/15/91
LAB QC:							
VBLK	MB1		W	91GVE362	N/A	N/A	11/20/91
LK	MB1	BS	W	91GVE362	N/A	N/A	11/21/91
BLK	MB1		W	91GVE276	N/A	N/A	11/15/91
VBLK	MB1	BS	W	91GVE276	N/A	N/A	11/15/91

SIGNATURE Jeff A. Kazinski DATE 12-5-91

WESTON-GULF COAST LABORATORIES, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533

ANALYTICAL REPORT

To: **Canonie Environmental**
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-1**
Project # 0000-00-00-0000
Lab ID: **9111G711-001**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

VOLATILES BY GC/MS, SPECIAL LIST

Volatile Compound	Result	Reporting Limit	Flag
Chloromethane	BDL	50	U
Bromomethane	BDL	50	U
Vinyl Chloride	1100	50	
Chloroethane	E	50	
Methylene Chloride	150	25	
Acetone	130	50	
Carbon Disulfide	BDL	25	U
1,1-Dichloroethene	BDL	25	U
1,1-Dichloroethane	100	25	
1,2-Dichloroethene (total)	1100	25	
Chloroform	BDL	25	U
1,2-Dichloroethane	BDL	25	U
2-Butanone	BDL	50	U
1,1,1-Trichloroethane	16	25	J
Carbon Tetrachloride	BDL	25	U
Vinyl Acetate	BDL	50	U
Bromodichloromethane	BDL	25	U

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Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-1**
Project # 0000-00-00-0000
Lab ID: **9111G711-001**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

VOLATILES BY GC/MS, SPECIAL LIST

Volatile Compound	Result	Reporting Limit	Flag
1,2-Dichloropropane	BDL	25	U
cis-1,3-Dichloropropene	BDL	25	U
Trichloroethene	57	25	
Dibromochloromethane	BDL	25	U
1,1,2-Trichloroethane	BDL	25	U
Benzene	480	25	
Trans-1,3-Dichloropropene	BDL	25	U
Bromoform	BDL	25	U
4-Methyl-2-pentanone	39	50	J
2-Hexanone	BDL	50	U
Tetrachloroethene	BDL	25	U
1,1,2,2-Tetrachloroethane	BDL	25	U
Toluene	530	25	
Chlorobenzene	BDL	25	U
Ethylbenzene	BDL	25	U
Styrene	BDL	25	U
Xylene (total)	BDL	25	U

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Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-1**
Project # 0000-00-00-0000
Lab ID: **9111G711-001**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

VOLATILES BY GC/MS, SPECIAL LIST

Volatile Compound	Result	Reporting Limit	Flag
Trichlorotrifluoroethane	BDL	50	U
Tetrahydrofuran	E	25	

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ANALYTICAL REPORT

To: Canonie Environmental
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: Mr. Terry Ashworth

Date: Thursday December 5th, 1991

RE: MW-1
Project # 0000-00-00-0000
Lab ID: 9111G711-001 DL
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

VOLATILES BY GC/MS, SPECIAL LIST

Volatile Compound	Result	Reporting Limit	Flag
Chloroethane	1900	1000	
Tetrahydrofuran	2100	500	

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ANALYTICAL REPORT

To: **Canonie Environmental**
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-2**
Project # 0000-00-00-0000
Lab ID: **9111G711-002**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

VOLATILES BY GC/MS, SPECIAL LIST

Volatile Compound	Result	Reporting Limit	Flag
Chloromethane	BDL	200	U
Bromomethane	BDL	200	U
Vinyl Chloride	260	200	
Chloroethane	BDL	200	U
Methylene Chloride	E	100	
Acetone	E	200	
Carbon Disulfide	750	100	
1,1-Dichloroethene	260	100	
1,1-Dichloroethane	460	100	
1,2-Dichloroethene (total)	3900	100	
Chloroform	E	100	
1,2-Dichloroethane	BDL	100	U
2-Butanone	700	200	
1,1,1-Trichloroethane	2500	100	
Carbon Tetrachloride	980	100	
Vinyl Acetate	BDL	200	U
Bromodichloromethane	BDL	100	U

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Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-2**
Project # 0000-00-00-0000
Lab ID: **9111G711-002**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

VOLATILES BY GC/MS, SPECIAL LIST

Volatile Compound	Result	Reporting Limit	Flag
1,2-Dichloropropane	79	100	J
cis-1,3-Dichloropropene	BDL	100	U
Trichloroethene	E	100	
Dibromochloromethane	BDL	100	U
1,1,2-Trichloroethane	BDL	100	U
Benzene	E	100	
Trans-1,3-Dichloropropene	BDL	100	U
Bromoform	BDL	100	U
4-Methyl-2-pentanone	BDL	200	U
2-Hexanone	BDL	200	U
Tetrachloroethene	440	100	
1,1,2,2-Tetrachloroethane	BDL	100	U
Toluene	E	100	
Chlorobenzene	BDL	100	U
Ethylbenzene	300	100	
Styrene	BDL	100	U
Xylene (total)	2000	100	

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To: Canonie Environmental
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: Mr. Terry Ashworth

Date: Thursday December 5th, 1991

RE: MW-2
Project # 0000-00-00-0000
Lab ID: 9111G711-002
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

VOLATILES BY GC/MS, SPECIAL LIST

Volatile Compound	Result	Reporting Limit	Flag
Trichlorotrifluoroethane	E	200	
Tetrahydrofuran	BDL	100	U

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To: **Canonie Environmental**
800 Canonie Drive
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Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-2**
Project # 0000-00-00-0000
Lab ID: **9111G711-002 DL**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

VOLATILES BY GC/MS, SPECIAL LIST

Volatile Compound	Result	Reporting Limit	Flag
Methylene Chloride	12000	500	
Acetone	4700	1000	
Chloroform	E	500	
Trichloroethene	16000	500	
Benzene	8100	500	
Toluene	E	500	
Trichlorotrifluoroethane	4200	1000	

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To: **Canonie Environmental**
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-2**
Project # 0000-00-00-0000
Lab ID: **9111G711-002 DL**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

VOLATILES BY GC/MS, SPECIAL LIST

Volatile Compound	Result	Reporting Limit	Flag
Chloroform	54000	10000	
Toluene	300000	10000	

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ANALYTICAL REPORT

To: **Canonie Environmental**
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-3**
Project # 0000-00-00-0000
Lab ID: **9111G711-003**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

VOLATILES BY GC/MS, SPECIAL LIST

Volatile Compound	Result	Reporting Limit	Flag
Chloromethane	BDL	100	U
Bromomethane	BDL	100	U
Vinyl Chloride	BDL	100	U
Chloroethane	BDL	100	U
Methylene Chloride	BDL	50	U
Acetone	230	100	
Carbon Disulfide	BDL	50	U
1,1-Dichloroethene	BDL	50	U
1,1-Dichloroethane	BDL	50	U
1,2-Dichloroethene (total)	BDL	50	U
Chloroform	BDL	50	U
1,2-Dichloroethane	BDL	50	U
2-Butanone	BDL	100	U
1,1,1-Trichloroethane	BDL	50	U
Carbon Tetrachloride	BDL	50	U
Vinyl Acetate	BDL	100	U
Bromodichloromethane	BDL	50	U

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To: **Canonie Environmental**
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-3**
Project # 0000-00-00-0000
Lab ID: **9111G711-003**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

VOLATILES BY GC/MS, SPECIAL LIST

Volatile Compound	Result	Reporting Limit	Flag
1,2-Dichloropropane	BDL	50	U
cis-1,3-Dichloropropene	BDL	50	U
Trichloroethene	BDL	50	U
Dibromochloromethane	BDL	50	U
1,1,2-Trichloroethane	BDL	50	U
Benzene	7000	50	
Trans-1,3-Dichloropropene	BDL	50	U
Bromoform	BDL	50	U
4-Methyl-2-pentanone	BDL	100	U
2-Hexanone	BDL	100	U
Tetrachloroethene	BDL	50	U
1,1,2,2-Tetrachloroethane	BDL	50	U
Toluene	1800	50	
Chlorobenzene	BDL	50	U
Ethylbenzene	BDL	50	U
Styrene	BDL	50	U
Xylene (total)	BDL	50	U

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Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-3**
Project # 0000-00-00-0000
Lab ID: **9111G711-003**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

VOLATILES BY GC/MS, SPECIAL LIST

Volatile Compound	Result	Reporting Limit	Flag
Trichlorotrifluoroethane	BDL	100	U
Tetrahydrofuran	3000	50	

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ANALYTICAL REPORT

To: **Canonie Environmental**
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **Duplicate**
Project # 0000-00-00-0000
Lab ID: **9111G711-004**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

VOLATILES BY GC/MS, SPECIAL LIST

Volatile Compound	Result	Reporting Limit	Flag
Chloromethane	BDL	100	U
Bromomethane	BDL	100	U
Vinyl Chloride	BDL	100	U
Chloroethane	BDL	100	U
Methylene Chloride	BDL	50	U
Acetone	170	100	
Carbon Disulfide	BDL	50	U
1,1-Dichloroethene	BDL	50	U
1,1-Dichloroethane	BDL	50	U
1,2-Dichloroethene (total)	BDL	50	U
Chloroform	BDL	50	U
1,2-Dichloroethane	BDL	50	U
2-Butanone	BDL	100	U
1,1,1-Trichloroethane	BDL	50	U
Carbon Tetrachloride	BDL	50	U
Vinyl Acetate	BDL	100	U
Bromodichloromethane	BDL	50	U

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To: **Canonie Environmental**
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **Duplicate**
Project # 0000-00-00-0000
Lab ID: **9111G711-004**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

VOLATILES BY GC/MS, SPECIAL LIST

Volatile Compound	Result	Reporting Limit	Flag
1,2-Dichloropropane	BDL	50	U
cis-1,3-Dichloropropene	BDL	50	U
Trichloroethene	BDL	50	U
Dibromochloromethane	BDL	50	U
1,1,2-Trichloroethane	BDL	50	U
Benzene	5800	50	
Trans-1,3-Dichloropropene	BDL	50	U
Bromoform	BDL	50	U
4-Methyl-2-pentanone	BDL	100	U
2-Hexanone	BDL	100	U
Tetrachloroethene	BDL	50	U
1,1,2,2-Tetrachloroethane	BDL	50	U
Toluene	1200	50	
Chlorobenzene	BDL	50	U
Ethylbenzene	BDL	50	U
Styrene	BDL	50	U
Xylene (total)	BDL	50	U

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Date: Thursday December 5th, 1991

RE: **Duplicate**
Project # 0000-00-00-0000
Lab ID: **9111G711-004**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

VOLATILES BY GC/MS, SPECIAL LIST

Volatile Compound	Result	Reporting Limit	Flag
Trichlorotrifluoroethane	BDL	100	U
Tetrahydrofuran	2300	50	

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To: **Canonie Environmental**
800 Canonie Drive
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Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **Trip Blank**
Project # 0000-00-00-0000
Lab ID: **9111G711-005**
Sample Date: 11/01/91
Date Received: 11/08/91
Units: UG/L

VOLATILES BY GC/MS, SPECIAL LIST

Volatile Compound	Result	Reporting Limit	Flag
Chloromethane	BDL	10	U
Bromomethane	BDL	10	U
Vinyl Chloride	BDL	10	U
Chloroethane	BDL	10	U
Methylene Chloride	BDL	5	U
Acetone	BDL	10	U
Carbon Disulfide	BDL	5	U
1,1-Dichloroethene	BDL	5	U
1,1-Dichloroethane	BDL	5	U
1,2-Dichloroethene (total)	BDL	5	U
Chloroform	BDL	5	U
1,2-Dichloroethane	BDL	5	U
2-Butanone	BDL	10	U
1,1,1-Trichloroethane	BDL	5	U
Carbon Tetrachloride	BDL	5	U
Vinyl Acetate	BDL	10	U
Bromodichloromethane	BDL	5	U

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Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **Trip Blank**
Project # 0000-00-00-0000
Lab ID: **9111G711-005**
Sample Date: 11/01/91
Date Received: 11/08/91
Units: UG/L

VOLATILES BY GC/MS, SPECIAL LIST

Volatile Compound	Result	Reporting Limit	Flag
1,2-Dichloropropane	BDL	5	U
cis-1,3-Dichloropropene	BDL	5	U
Trichloroethene	BDL	5	U
Dibromochloromethane	BDL	5	U
1,1,2-Trichloroethane	BDL	5	U
Benzene	BDL	5	U
Trans-1,3-Dichloropropene	BDL	5	U
Bromoform	BDL	5	U
4-Methyl-2-pentanone	BDL	10	U
2-Hexanone	BDL	10	U
Tetrachloroethene	BDL	5	U
1,1,2,2-Tetrachloroethane	BDL	5	U
Toluene	BDL	5	U
Chlorobenzene	BDL	5	U
Ethylbenzene	BDL	5	U
Styrene	BDL	5	U
Xylene (total)	BDL	5	U

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Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **Trip Blank**
Project # 0000-00-00-0000
Lab ID: **9111G711-005**
Sample Date: 11/01/91
Date Received: 11/08/91
Units: UG/L

VOLATILES BY GC/MS, SPECIAL LIST

Volatile Compound	Result	Reporting Limit	Flag
Trichlorotrifluoroethane	BDL	10	U
Tetrahydrofuran	BDL	5	U

Roy F. Weston, Inc. - Gulf Coast Laboratories
VOLATILES BY GC/MS, SPECIAL LIST
Report Date: 12/05/91 10:26

RFW Batch Number: 9111G711 Client: Canonie Environmental Work Order: 0000-00-00-0000 Page: 1a

	Cust ID:	MW-1		MW-1		MW-2		MW-2		MW-2		MW-3	
Sample Information	RFW#:	001		001 DL		002		002 DL		002 DL		003	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	5.00		100		20.0		100		2000		10.0	
	Units:	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
Surrogate Recovery	Toluene-d8	104	%	98	%	91	%	101	%	98	%	101	%
	Bromofluorobenzene	99	%	104	%	105	%	104	%	104	%	104	%
	1,2-Dichloroethane-d4	98	%	102	%	104	%	96	%	99	%	100	%
Chloromethane		50	U	NA		200	U	NA		NA		100	U
Bromomethane		50	U	NA		200	U	NA		NA		100	U
Vinyl Chloride		1100		NA		260		NA		NA		100	U
Chloroethane			E	1900		200	U	NA		NA		100	U
Methylene Chloride		150		NA			E	12000		NA		50	U
Acetone		130		NA			E	4700		NA		230	
Carbon Disulfide		25	U	NA		750		NA		NA		50	U
1,1-Dichloroethene		25	U	NA		260		NA		NA		50	U
1,1-Dichloroethane		100		NA		460		NA		NA		50	U
1,2-Dichloroethene (total)		1100		NA		3900		NA		NA		50	U
Chloroform		25	U	NA			E		E	54000		50	U
1,2-Dichloroethane		25	U	NA		100	U	NA		NA		50	U
2-Butanone		50	U	NA		700		NA		NA		100	U
1,1,1-Trichloroethane		16	J	NA		2500		NA		NA		50	U
Carbon Tetrachloride		25	U	NA		980		NA		NA		50	U
Vinyl Acetate		50	U	NA		200	U	NA		NA		100	U
Bromodichloromethane		25	U	NA		100	U	NA		NA		50	U
1,2-Dichloropropane		25	U	NA		79	J	NA		NA		50	U
cis-1,3-Dichloropropene		25	U	NA		100	U	NA		NA		50	U
Trichloroethene		57		NA			E	16000		NA		50	U
Dibromochloromethane		25	U	NA		100	U	NA		NA		50	U
1,1,2-Trichloroethane		25	U	NA		100	U	NA		NA		50	U
Benzene		480		NA			E	8100		NA		7000	
Trans-1,3-Dichloropropene		25	U	NA		100	U	NA		NA		50	U
Bromoform		25	U	NA		100	U	NA		NA		50	U
4-Methyl-2-pentanone		39	J	NA		200	U	NA		NA		100	U
2-Hexanone		50	U	NA		200	U	NA		NA		100	U
Tetrachloroethene		25	U	NA		440		NA		NA		50	U
1,1,2,2-Tetrachloroethane		25	U	NA		100	U	NA		NA		50	U

*= Outside of EPA CLP QC limits.

Cust ID:	MW-1		MW-1	MW-2		MW-2		MW-2	MW-3	
RFW#:	001		001 DL	002		002 DL		002 DL	003	
Toluene	530		NA		E		E	300000	1800	
Chlorobenzene	25	U	NA	100	U	NA		NA	50	U
Ethylbenzene	25	U	NA	300		NA		NA	50	U
Styrene	25	U	NA	100	U	NA		NA	50	U
Xylene (total)	25	U	NA	2000		NA		NA	50	U
Trichlorotrifluoroethane	50	U	NA		E	4200		NA	100	U
Tetrahydrofuran		E	2100	100	U	NA		NA	3000	

*= Outside of EPA CLP QC limits.

Roy F. Weston, Inc. - Gulf Coast Laboratories
VOLATILES BY GC/MS, SPECIAL LIST
Report Date: 12/05/91 10:26

RFW Batch Number: 9111G711 Client: Canonie Environmental Work Order: 0000-00-00-0000 Page: 2a

	Cust ID:	Duplicate	Duplicate	Duplicate	Trip Blank	VBLK	VBLK BS
Sample Information	RFW#:	004	004 MS	004 MSD	005	91GVE362-MB1	91GVE362-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	10.0	10.0	10.0	1.00	1.00	1.00
	Units:	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
Surrogate Recovery	Toluene-d8	100 %	99 %	100 %	99 %	101 %	98 %
	Bromofluorobenzene	104 %	102 %	102 %	102 %	102 %	101 %
	1,2-Dichloroethane-d4	99 %	98 %	97 %	100 %	98 %	94 %
Chloromethane		100 U	100 U	100 U	10 U	10 U	10 U
Bromomethane		100 U	100 U	100 U	10 U	10 U	10 U
Vinyl Chloride		100 U	100 U	100 U	10 U	10 U	10 U
Chloroethane		100 U	100 U	100 U	10 U	10 U	10 U
Methylene Chloride		50 U	50 U	50 U	5 U	5 U	5 U
Acetone		170	170	150	10 U	10 U	10 U
Carbon Disulfide		50 U	50 U	50 U	5 U	5 U	5 U
1,1-Dichloroethene		50 U	85 %	88 %	5 U	5 U	98 %
1,1-Dichloroethane		50 U	50 U	50 U	5 U	5 U	5 U
1,2-Dichloroethene (total)		50 U	50 U	50 U	5 U	5 U	5 U
Chloroform		50 U	50 U	50 U	5 U	5 U	5 U
1,2-Dichloroethane		50 U	50 U	50 U	5 U	5 U	5 U
2-Butanone		100 U	100 U	100 U	10 U	10 U	10 U
1,1,1-Trichloroethane		50 U	50 U	50 U	5 U	5 U	5 U
Carbon Tetrachloride		50 U	50 U	50 U	5 U	5 U	5 U
Vinyl Acetate		100 U	100 U	100 U	10 U	10 U	10 U
Bromodichloromethane		50 U	50 U	50 U	5 U	5 U	5 U
1,2-Dichloropropane		50 U	50 U	50 U	5 U	5 U	5 U
cis-1,3-Dichloropropene		50 U	50 U	50 U	5 U	5 U	5 U
Trichloroethene		50 U	93 %	92 %	5 U	5 U	108 %
Dibromochloromethane		50 U	50 U	50 U	5 U	5 U	5 U
1,1,2-Trichloroethane		50 U	50 U	50 U	5 U	5 U	5 U
Benzene		5800	154 * %	131 * %	5 U	5 U	105 %
Trans-1,3-Dichloropropene		50 U	50 U	50 U	5 U	5 U	5 U
Bromoform		50 U	50 U	50 U	5 U	5 U	5 U
4-Methyl-2-pentanone		100 U	100 U	100 U	10 U	10 U	10 U
2-Hexanone		100 U	100 U	100 U	10 U	10 U	10 U
Tetrachloroethene		50 U	50 U	50 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane		50 U	50 U	50 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

Cust ID:	Duplicate		Duplicate		Duplicate		Trip Blank		VBLK		VBLK BS	
RFW#:	004		004 MS		004 MSD		005		91GVE362-MB1		91GVE362-MB1	
Toluene	1200		97	%	100	%	5	U	5	U	110	%
Chlorobenzene	50	U	96	%	97	%	5	U	5	U	113	%
Ethylbenzene	50	U	50	U	50	U	5	U	5	U	5	U
Styrene	50	U	50	U	50	U	5	U	5	U	5	U
Xylene (total)	50	U	50	U	50	U	5	U	5	U	5	U
Trichlorotrifluoroethane	100	U	100	U	100	U	10	U	10	U	10	U
Tetrahydrofuran	2300		2400		2400		5	U	5	U	5	U

*= Outside of EPA CLP QC limits.

	Cust ID:	VBLK	VBLK BS
Sample Information	RFW#:	91GVE276-MB1	91GVE276-MB1
	Matrix:	WATER	WATER
	D.F.:	1.00	1.00
	Units:	UG/L	UG/L

Surrogate Recovery	Toluene-d8	99	%	98	%
	Bromofluorobenzene	103	%	100	%
	1,2-Dichloroethane-d4	101	%	101	%
Chloromethane		10	U	10	U
Bromomethane		10	U	10	U
Vinyl Chloride		10	U	10	U
Chloroethane		10	U	10	U
Methylene Chloride		5	U	5	U
Acetone		10	U	10	U
Carbon Disulfide		5	U	5	U
1,1-Dichloroethene		5	U	109	%
1,1-Dichloroethane		5	U	5	U
1,2-Dichloroethene (total)		5	U	5	U
Chloroform		5	U	5	U
1,2-Dichloroethane		5	U	5	U
2-Butanone		10	U	10	U
1,1,1-Trichloroethane		5	U	5	U
Carbon Tetrachloride		5	U	5	U
Vinyl Acetate		10	U	10	U
Bromodichloromethane		5	U	5	U
1,2-Dichloropropane		5	U	5	U
cis-1,3-Dichloropropene		5	U	5	U
Trichloroethene		5	U	102	%
Dibromochloromethane		5	U	5	U
1,1,2-Trichloroethane		5	U	5	U
Benzene		5	U	99	%
Trans-1,3-Dichloropropene		5	U	5	U
Bromoform		5	U	5	U
4-Methyl-2-pentanone		10	U	10	U
2-Hexanone		10	U	10	U
Tetrachloroethene		5	U	5	U
1,1,2,2-Tetrachloroethane		5	U	5	U

*= Outside of EPA CLP QC limits.

	Cust ID:	VBLK	VBLK BS
	RFW#:	91GVE276-MB1	91GVE276-MB1
Toluene		5 U	148 * %
Chlorobenzene		5 U	109 %
Ethylbenzene		5 U	5 U
Styrene		5 U	5 U
Xylene (total)		5 U	5 U
Trichlorotrifluoroethane		10 U	10 U
Tetrahydrofuran		5 U	5 U

*= Outside of EPA CLP QC limits.

1A
VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

Trip Blank

Lab Name: Roy F. Weston, Inc. Work Order: 0000-00-00-0000

Client: Canonie Environmental

Matrix: WATER

Lab Sample ID: 9111G711-005

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: EOMY01

Level: (low/med) LOW

Date Received: 11/08/91

% Moisture: not dec. _____

Date Analyzed: 11/15/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02	Trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	5	U

1B
VOLATILE ORGANICS ANALYSIS SHEET

CLIENT SAMPLE NO.

Trip Blank

Lab Name: Roy F. Weston, Inc. Work Order: 0000-00-00-0000

Client: Canonie Environmental

Matrix: WATER

Lab Sample ID: 9111G711-005

Sample wt/vol: 5.00 (g/mL) ML

Lab File ID: EOMY01

Level: (low/med) LOW

Date Received: 11/08/91

% Moisture: not dec. _____

Date Analyzed: 11/15/91

Column: (pack/cap) CAP

Dilution Factor: 1.00

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	
76-13-1	Trichlorotrifluoroethane	10	U
109-99-9	Tetrahydrofuran	5	U

Roy F. Weston, Inc. - Gulf Coast Laboratories
BNA ANALYTICAL DATA PACKAGE FOR
Canonie Environmental

LABORATORY CHRONICLE
DATE RECEIVED: 11/08/91

RFW LOT # :9111G711

CLIENT ID	RFW #		MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
MW-1	001		W	91GB0503	11/07/91	11/11/91	11/14/91
MW-1	001	01	W	91GB0503	11/07/91	11/11/91	11/15/91
MW-2	002		W	91GB0503	11/07/91	11/11/91	11/14/91
MW-2	002	01	W	91GB0503	11/07/91	11/11/91	11/15/91
MW-3	003		W	91GB0503	11/07/91	11/11/91	11/14/91
MW-3	003	01	W	91GB0503	11/07/91	11/11/91	11/15/91
MW-3	003	02	W	91GB0503	11/07/91	11/11/91	11/15/91
Duplicate	004		W	91GB0503	11/07/91	11/11/91	11/14/91
Duplicate	004	01	W	91GB0503	11/07/91	11/11/91	11/15/91
Duplicate	004	02	W	91GB0503	11/07/91	11/11/91	11/15/91
LAB QC:							
SBLK	MB1		W	91GB0503	N/A	11/11/91	11/14/91
SBLK	MB1 BS		W	91GB0503	N/A	11/11/91	11/14/91
SBLK	MB1 BSD		W	91GB0503	N/A	11/11/91	11/14/91

SIGNATURE Jeff A. Kozinski DATE 12-5-91

WESTON-GULF COAST LABORATORIES, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533

ANALYTICAL REPORT

To: **Canonie Environmental**
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-1**
Project # 0000-00-00-0000
Lab ID: **9111G711-001**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

SEMIVOLATILES BY GC/MS, SPECIAL LIST

Semivolatile Compound	Result	Reporting Limit	Flag
Phenol	23	60	J
bis(2-Chloroethyl)ether	BDL	60	U
2-Chlorophenol	BDL	60	U
1,3-Dichlorobenzene	BDL	60	U
1,4-Dichlorobenzene	BDL	60	U
Benzyl alcohol	BDL	60	U
1,2-Dichlorobenzene	BDL	60	U
2-Methylphenol	46	60	J
bis(2-Chloroisopropyl)ether	BDL	60	U
4-Methylphenol	14	60	J
N-Nitroso-Di-n-propylamine	BDL	60	U
Hexachloroethane	BDL	60	U
Nitrobenzene	BDL	60	U
Isophorone	BDL	60	U
2-Nitrophenol	BDL	60	U
2,4-Dimethylphenol	BDL	60	U
Benzoic acid	BDL	300	U

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800 Canonie Drive
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Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-1**
Project # 0000-00-00-0000
Lab ID: **9111G711-001**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

SEMIVOLATILES BY GC/MS, SPECIAL LIST

Semivolatile Compound	Result	Reporting Limit	Flag
bis(2-Chloroethoxy)methane	BDL	60	U
2,4-Dichlorophenol	BDL	60	U
1,2,4-Trichlorobenzene	BDL	60	U
Naphthalene	BDL	60	U
4-Chloroaniline	BDL	60	U
Hexachlorobutadiene	BDL	60	U
4-Chloro-3-methylphenol	BDL	60	U
2-Methylnaphthalene	BDL	60	U
Hexachlorocyclopentadiene	BDL	60	U
2,4,6-Trichlorophenol	BDL	60	U
2,4,5-Trichlorophenol	BDL	300	U
2-Chloronaphthalene	BDL	60	U
2-Nitroaniline	BDL	300	U
Dimethylphthalate	BDL	60	U
Acenaphthylene	BDL	60	U
2,6-Dinitrotoluene	BDL	60	U
3-Nitroaniline	BDL	300	U

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Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-1**
Project # 0000-00-00-0000
Lab ID: **9111G711-001**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

SEMIVOLATILES BY GC/MS, SPECIAL LIST

Semivolatile Compound	Result	Reporting Limit	Flag
Acenaphthene	BDL	60	U
2,4-Dinitrophenol	BDL	300	U
4-Nitrophenol	BDL	300	U
Dibenzofuran	BDL	60	U
2,4-Dinitrotoluene	BDL	60	U
Diethylphthalate	BDL	60	U
4-Chlorophenyl-phenylether	BDL	60	U
Fluorene	BDL	60	U
4-Nitroaniline	BDL	300	U
4,6-Dinitro-2-methylphenol	BDL	300	U
N-Nitrosodiphenylamine (1)	BDL	60	U
4-Bromophenyl-phenylether	BDL	60	U
Hexachlorobenzene	BDL	60	U
Pentachlorophenol	BDL	300	U
Phenanthrene	BDL	60	U
Anthracene	BDL	60	U
Di-n-Butylphthalate	BDL	60	U

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ANALYTICAL REPORT

To: Canonie Environmental
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-1**
Project # 0000-00-00-0000
Lab ID: **9111G711-001**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

SEMIVOLATILES BY GC/MS, SPECIAL LIST

Semivolatile Compound	Result	Reporting Limit	Flag
Fluoranthene	BDL	60	U
Pyrene	BDL	60	U
Butylbenzylphthalate	BDL	60	U
3,3'-Dichlorobenzidine	BDL	120	U
Benzo(a)anthracene	BDL	60	U
Chrysene	BDL	60	U
bis(2-Ethylhexyl)phthalate	BDL	60	U
Di-n-Octyl phthalate	BDL	60	U
Benzo(b)fluoranthene	BDL	60	U
Benzo(k)fluoranthene	BDL	60	U
Benzo(a)pyrene	BDL	60	U
Indeno(1,2,3-cd)pyrene	BDL	60	U
Dibenzo(a,h)anthracene	BDL	60	U
Benzo(g,h,i)perylene	BDL	60	U
Pyridine	53	60	J
3-Picoline	E	60	
N,N-Dimethylacetamide	180	60	

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2417 Bond St., University Park, Illinois 60466
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ANALYTICAL REPORT

To: **Canonie Environmental**
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-1**
Project # 0000-00-00-0000
Lab ID: **9111G711-001 DL**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

SEMIVOLATILES BY GC/MS, SPECIAL LIST

Semivolatile Compound	Result	Reporting Limit	Flag
3-Picoline	2700	300	

WESTON-GULF COAST LABORATORIES, INC.
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ANALYTICAL REPORT

To: Canonie Environmental
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-2**
Project # 0000-00-00-0000
Lab ID: **9111G711-002**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

SEMIVOLATILES BY GC/MS, SPECIAL LIST

Semivolatile Compound	Result	Reporting Limit	Flag
Phenol	BDL	2000	U
bis(2-Chloroethyl)ether	BDL	2000	U
2-Chlorophenol	BDL	2000	U
1,3-Dichlorobenzene	BDL	2000	U
1,4-Dichlorobenzene	BDL	2000	U
Benzyl alcohol	450	2000	J
1,2-Dichlorobenzene	BDL	2000	U
2-Methylphenol	490	2000	J
bis(2-Chloroisopropyl)ether	BDL	2000	U
4-Methylphenol	BDL	2000	U
N-Nitroso-Di-n-propylamine	BDL	2000	U
Hexachloroethane	BDL	2000	U
Nitrobenzene	BDL	2000	U
Isophorone	BDL	2000	U
2-Nitrophenol	BDL	2000	U
2,4-Dimethylphenol	BDL	2000	U
Benzoic acid	1500	9800	J

WESTON-GULF COAST LABORATORIES, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533

ANALYTICAL REPORT

To: Canonie Environmental
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: Mr. Terry Ashworth

Date: Thursday December 5th, 1991

RE: MW-2
Project # 0000-00-00-0000
Lab ID: 9111G711-002
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

SEMIVOLATILES BY GC/MS, SPECIAL LIST

Semivolatile Compound	Result	Reporting Limit	Flag
bis(2-Chloroethoxy)methane	BDL	2000	U
2,4-Dichlorophenol	BDL	2000	U
1,2,4-Trichlorobenzene	BDL	2000	U
Naphthalene	BDL	2000	U
4-Chloroaniline	BDL	2000	U
Hexachlorobutadiene	BDL	2000	U
4-Chloro-3-methylphenol	BDL	2000	U
2-Methylnaphthalene	BDL	2000	U
Hexachlorocyclopentadiene	BDL	2000	U
2,4,6-Trichlorophenol	BDL	2000	U
2,4,5-Trichlorophenol	BDL	9800	U
2-Chloronaphthalene	BDL	2000	U
2-Nitroaniline	BDL	9800	U
Dimethylphthalate	BDL	2000	U
Acenaphthylene	BDL	2000	U
2,6-Dinitrotoluene	BDL	2000	U
3-Nitroaniline	BDL	9800	U

WESTON-GULF COAST LABORATORIES, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533

ANALYTICAL REPORT

To: Canonie Environmental
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: Mr. Terry Ashworth

Date: Thursday December 5th, 1991

RE: MW-2
Project # 0000-00-00-0000
Lab ID: 9111G711-002
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

SEMIVOLATILES BY GC/MS, SPECIAL LIST

Semivolatile Compound	Result	Reporting Limit	Flag
Acenaphthene	BDL	2000	U
2,4-Dinitrophenol	BDL	9800	U
4-Nitrophenol	BDL	9800	U
Dibenzofuran	BDL	2000	U
2,4-Dinitrotoluene	BDL	2000	U
Diethylphthalate	BDL	2000	U
4-Chlorophenyl-phenylether	BDL	2000	U
Fluorene	BDL	2000	U
4-Nitroaniline	BDL	9800	U
4,6-Dinitro-2-methylphenol	BDL	9800	U
N-Nitrosodiphenylamine (1)	BDL	2000	U
4-Bromophenyl-phenylether	BDL	2000	U
Hexachlorobenzene	BDL	2000	U
Pentachlorophenol	BDL	9800	U
Phenanthrene	BDL	2000	U
Anthracene	BDL	2000	U
Di-n-Butylphthalate	BDL	2000	U

WESTON-GULF COAST LABORATORIES, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533

ANALYTICAL REPORT

To: Canonie Environmental
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: Mr. Terry Ashworth

Date: Thursday December 5th, 1991

RE: MW-2
Project # 0000-00-00-0000
Lab ID: 9111G711-002
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

SEMIVOLATILES BY GC/MS, SPECIAL LIST

Semivolatile Compound	Result	Reporting Limit	Flag
Fluoranthene	BDL	2000	U
Pyrene	BDL	2000	U
Butylbenzylphthalate	BDL	2000	U
3,3'-Dichlorobenzidine	BDL	3900	U
Benzo(a)anthracene	BDL	2000	U
Chrysene	BDL	2000	U
bis(2-Ethylhexyl)phthalate	BDL	2000	U
Di-n-Octyl phthalate	BDL	2000	U
Benzo(b)fluoranthene	BDL	2000	U
Benzo(k)fluoranthene	BDL	2000	U
Benzo(a)pyrene	BDL	2000	U
Indeno(1,2,3-cd)pyrene	BDL	2000	U
Dibenzo(a,h)anthracene	BDL	2000	U
Benzo(g,h,i)perylene	BDL	2000	U
Pyridine	2400	2000	
3-Picoline	E	2000	
N,N-Dimethylacetamide	E	2000	

WESTON-GULF COAST LABORATORIES, INC.
2417 Bond St., University Park, Illinois 60466
Phones: (708) 534-5200 (219) 885-7077 (815) 723-7533

ANALYTICAL REPORT

To: **Canonie Environmental**
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-2**
Project # 0000-00-00-0000
Lab ID: **9111G711-002 DL**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

SEMIVOLATILES BY GC/MS, SPECIAL LIST

Semivolatile Compound	Result	Reporting Limit	Flag
3-Picoline	290000	39000	
N,N-Dimethylacetamide	850000	39000	

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ANALYTICAL REPORT

To: **Canonie Environmental**
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-3**
Project # 0000-00-00-0000
Lab ID: **9111G711-003**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

SEMIVOLATILES BY GC/MS, SPECIAL LIST

Semivolatile Compound	Result	Reporting Limit	Flag
Phenol	22	76	J
bis(2-Chloroethyl)ether	BDL	76	U
2-Chlorophenol	BDL	76	U
1,3-Dichlorobenzene	BDL	76	U
1,4-Dichlorobenzene	BDL	76	U
Benzyl alcohol	BDL	76	U
1,2-Dichlorobenzene	BDL	76	U
2-Methylphenol	BDL	76	U
bis(2-Chloroisopropyl)ether	BDL	76	U
4-Methylphenol	BDL	76	U
N-Nitroso-Di-n-propylamine	BDL	76	U
Hexachloroethane	BDL	76	U
Nitrobenzene	BDL	76	U
Isophorone	BDL	76	U
2-Nitrophenol	BDL	76	U
2,4-Dimethylphenol	39	76	J
Benzoic acid	BDL	380	U

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To: Canonie Environmental
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-3**
Project # 0000-00-00-0000
Lab ID: **9111G711-003**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

SEMIVOLATILES BY GC/MS, SPECIAL LIST

Semivolatile Compound	Result	Reporting Limit	Flag
bis(2-Chloroethoxy)methane	BDL	76	U
2,4-Dichlorophenol	BDL	76	U
1,2,4-Trichlorobenzene	BDL	76	U
Naphthalene	50	76	J
4-Chloroaniline	BDL	76	U
Hexachlorobutadiene	BDL	76	U
4-Chloro-3-methylphenol	BDL	76	U
2-Methylnaphthalene	7	76	J
Hexachlorocyclopentadiene	BDL	76	U
2,4,6-Trichlorophenol	BDL	76	U
2,4,5-Trichlorophenol	BDL	380	U
2-Chloronaphthalene	BDL	76	U
2-Nitroaniline	BDL	380	U
Dimethylphthalate	BDL	76	U
Acenaphthylene	BDL	76	U
2,6-Dinitrotoluene	BDL	76	U
3-Nitroaniline	BDL	380	U

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Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-3**
Project # 0000-00-00-0000
Lab ID: **9111G711-003**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

SEMIVOLATILES BY GC/MS, SPECIAL LIST

Semivolatile Compound	Result	Reporting Limit	Flag
Acenaphthene	18	76	J
2,4-Dinitrophenol	BDL	380	U
4-Nitrophenol	BDL	380	U
Dibenzofuran	9	76	J
2,4-Dinitrotoluene	BDL	76	U
Diethylphthalate	BDL	76	U
4-Chlorophenyl-phenylether	BDL	76	U
Fluorene	12	76	J
4-Nitroaniline	BDL	380	U
4,6-Dinitro-2-methylphenol	BDL	380	U
N-Nitrosodiphenylamine (1)	BDL	76	U
4-Bromophenyl-phenylether	BDL	76	U
Hexachlorobenzene	BDL	76	U
Pentachlorophenol	BDL	380	U
Phenanthrene	11	76	J
Anthracene	BDL	76	U
Di-n-Butylphthalate	BDL	76	U

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To: **Canonie Environmental**
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Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-3**
Project # 0000-00-00-0000
Lab ID: **9111G711-003**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

SEMIVOLATILES BY GC/MS, SPECIAL LIST

Semivolatile Compound	Result	Reporting Limit	Flag
Fluoranthene	BDL	76	U
Pyrene	BDL	76	U
Butylbenzylphthalate	BDL	76	U
3,3'-Dichlorobenzidine	BDL	150	U
Benzo(a)anthracene	BDL	76	U
Chrysene	BDL	76	U
bis(2-Ethylhexyl)phthalate	BDL	76	U
Di-n-Octyl phthalate	BDL	76	U
Benzo(b)fluoranthene	BDL	76	U
Benzo(k)fluoranthene	BDL	76	U
Benzo(a)pyrene	BDL	76	U
Indeno(1,2,3-cd)pyrene	BDL	76	U
Dibenzo(a,h)anthracene	BDL	76	U
Benzo(g,h,i)perylene	BDL	76	U
Pyridine	64	76	J
3-Picoline	E	76	
N,N-Dimethylacetamide	E	76	

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ANALYTICAL REPORT

To: **Canonie Environmental**
800 Canonie Drive
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Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-3**
Project # 0000-00-00-0000
Lab ID: **9111G711-003 DL**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

SEMIVOLATILES BY GC/MS, SPECIAL LIST

Semivolatile Compound	Result	Reporting Limit	Flag
3-Picoline	4600	380	
N,N-Dimethylacetamide	E	380	

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Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **MW-3**
Project # 0000-00-00-0000
Lab ID: **9111G711-003 DL**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

SEMIVOLATILES BY GC/MS, SPECIAL LIST

Semivolatile Compound	Result	Reporting Limit	Flag
N,N-Dimethylacetamide	22000	1500	

WESTON-GULF COAST LABORATORIES, INC.
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ANALYTICAL REPORT

To: Canonie Environmental
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: Mr. Terry Ashworth

Date: Thursday December 5th, 1991

RE: Duplicate
Project # 0000-00-00-0000
Lab ID: 9111G711-004
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

SEMIVOLATILES BY GC/MS, SPECIAL LIST

Semivolatile Compound	Result	Reporting Limit	Flag
Phenol	24	88	J
bis(2-Chloroethyl)ether	BDL	88	U
2-Chlorophenol	BDL	88	U
1,3-Dichlorobenzene	BDL	88	U
1,4-Dichlorobenzene	BDL	88	U
Benzyl alcohol	BDL	88	U
1,2-Dichlorobenzene	BDL	88	U
2-Methylphenol	BDL	88	U
bis(2-Chloroisopropyl)ether	BDL	88	U
4-Methylphenol	BDL	88	U
N-Nitroso-Di-n-propylamine	BDL	88	U
Hexachloroethane	BDL	88	U
Nitrobenzene	BDL	88	U
Isophorone	BDL	88	U
2-Nitrophenol	BDL	88	U
2,4-Dimethylphenol	37	88	J
Benzoic acid	BDL	440	U

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ANALYTICAL REPORT

To: **Canonie Environmental**
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **Duplicate**
Project # 0000-00-00-0000
Lab ID: **9111G711-004**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

SEMIVOLATILES BY GC/MS, SPECIAL LIST

Semivolatile Compound	Result	Reporting Limit	Flag
bis(2-Chloroethoxy)methane	BDL	88	U
2,4-Dichlorophenol	BDL	88	U
1,2,4-Trichlorobenzene	BDL	88	U
Naphthalene	55	88	J
4-Chloroaniline	BDL	88	U
Hexachlorobutadiene	BDL	88	U
4-Chloro-3-methylphenol	BDL	88	U
2-Methylnaphthalene	8	88	J
Hexachlorocyclopentadiene	BDL	88	U
2,4,6-Trichlorophenol	BDL	88	U
2,4,5-Trichlorophenol	BDL	440	U
2-Chloronaphthalene	BDL	88	U
2-Nitroaniline	BDL	440	U
Dimethylphthalate	BDL	88	U
Acenaphthylene	BDL	88	U
2,6-Dinitrotoluene	BDL	88	U
3-Nitroaniline	BDL	440	U

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Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **Duplicate**
Project # 0000-00-00-0000
Lab ID: **9111G711-004**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

SEMIVOLATILES BY GC/MS, SPECIAL LIST

Semivolatile Compound	Result	Reporting Limit	Flag
Acenaphthene	20	88	J
2,4-Dinitrophenol	BDL	440	U
4-Nitrophenol	BDL	440	U
Dibenzofuran	10	88	J
2,4-Dinitrotoluene	BDL	88	U
Diethylphthalate	BDL	88	U
4-Chlorophenyl-phenylether	BDL	88	U
Fluorene	56	88	J
4-Nitroaniline	BDL	440	U
4,6-Dinitro-2-methylphenol	BDL	440	U
N-Nitrosodiphenylamine (1)	BDL	88	U
4-Bromophenyl-phenylether	BDL	88	U
Hexachlorobenzene	BDL	88	U
Pentachlorophenol	BDL	440	U
Phenanthrene	13	88	J
Anthracene	BDL	88	U
Di-n-Butylphthalate	BDL	88	U

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ANALYTICAL REPORT

To: Canonie Environmental
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: Mr. Terry Ashworth

Date: Thursday December 5th, 1991

RE: Duplicate
Project # 0000-00-00-0000
Lab ID: 9111G711-004
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

SEMIVOLATILES BY GC/MS, SPECIAL LIST

Semivolatile Compound	Result	Reporting Limit	Flag
Fluoranthene	BDL	88	U
Pyrene	BDL	88	U
Butylbenzylphthalate	BDL	88	U
3,3'-Dichlorobenzidine	BDL	180	U
Benzo(a)anthracene	BDL	88	U
Chrysene	BDL	88	U
bis(2-Ethylhexyl)phthalate	BDL	88	U
Di-n-Octyl phthalate	BDL	88	U
Benzo(b)fluoranthene	BDL	88	U
Benzo(k)fluoranthene	BDL	88	U
Benzo(a)pyrene	BDL	88	U
Indeno(1,2,3-cd)pyrene	BDL	88	U
Dibenzo(a,h)anthracene	BDL	88	U
Benzo(g,h,i)perylene	BDL	88	U
Pyridine	71	88	J
3-Picoline	E	88	
N,N-Dimethylacetamide	E	88	

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ANALYTICAL REPORT

To: **Canonie Environmental**
800 Canonie Drive
Porter Drive
Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **Duplicate**
Project # 0000-00-00-0000
Lab ID: **9111G711-004 DL**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

SEMIVOLATILES BY GC/MS, SPECIAL LIST

Semivolatile Compound	Result	Reporting Limit	Flag
3-Picoline	4900	440	
N,N-Dimethylacetamide	E	440	

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To: **Canonie Environmental**
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Porter, IN 46304

Attn: **Mr. Terry Ashworth**

Date: Thursday December 5th, 1991

RE: **Duplicate**
Project # 0000-00-00-0000
Lab ID: **9111G711-004 DL**
Sample Date: 11/07/91
Date Received: 11/08/91
Units: UG/L

SEMIVOLATILES BY GC/MS, SPECIAL LIST

Semivolatile Compound	Result	Reporting Limit	Flag
N,N-Dimethylacetamide	27000	1800	

Roy F. Weston, Inc. - Gulf Coast Laboratories
SEMIVOLATILES BY GC/MS, SPECIAL LIST
Report Date: 12/05/91 12:59

RFW Batch Number: 9111G711 Client: Canonie Environmental Work Order: 0000-00-00-0000 Page: 1a

	Cust ID:	MW-1		MW-1		MW-2		MW-2		MW-3		MW-3	
Sample Information	RFW#:	001		001 DL		002		002 DL		003		003 DL	
	Matrix:	WATER		WATER		WATER		WATER		WATER		WATER	
	D.F.:	5.00		25.0		200		4000		10.0		50.0	
	Units:	UG/L		UG/L		UG/L		UG/L		UG/L		UG/L	
Surrogate Recovery	Nitrobenzene-d5	92	%	D	%	D	%	D	%	109	%	D	%
	2-Fluorobiphenyl	99	%	D	%	D	%	D	%	115	%	D	%
	Terphenyl-d14	115	%	D	%	D	%	D	%	124	%	D	%
	Phenol-d5	17	%	D	%	D	%	D	%	47	%	D	%
	2-Fluorophenol	71	%	D	%	D	%	D	%	71	%	D	%
	2,4,6-Br3-phenol	100	%	D	%	D	%	D	%	113	%	D	%
Phenol		23	J	NA		2000	U	NA		22	J	NA	
bis(2-Chloroethyl)ether		60	U	NA		2000	U	NA		76	U	NA	
2-Chlorophenol		60	U	NA		2000	U	NA		76	U	NA	
1,3-Dichlorobenzene		60	U	NA		2000	U	NA		76	U	NA	
1,4-Dichlorobenzene		60	U	NA		2000	U	NA		76	U	NA	
Benzyl alcohol		60	U	NA		450	J	NA		76	U	NA	
1,2-Dichlorobenzene		60	U	NA		2000	U	NA		76	U	NA	
2-Methylphenol		46	J	NA		490	J	NA		76	U	NA	
bis(2-Chloroisopropyl)ether		60	U	NA		2000	U	NA		76	U	NA	
4-Methylphenol		14	J	NA		2000	U	NA		76	U	NA	
N-Nitroso-Di-n-propylamine		60	U	NA		2000	U	NA		76	U	NA	
Hexachloroethane		60	U	NA		2000	U	NA		76	U	NA	
Nitrobenzene		60	U	NA		2000	U	NA		76	U	NA	
Isophorone		60	U	NA		2000	U	NA		76	U	NA	
2-Nitrophenol		60	U	NA		2000	U	NA		76	U	NA	
2,4-Dimethylphenol		60	U	NA		2000	U	NA		39	J	NA	
Benzoic acid		300	U	NA		1500	J	NA		380	U	NA	
bis(2-Chloroethoxy)methane		60	U	NA		2000	U	NA		76	U	NA	
2,4-Dichlorophenol		60	U	NA		2000	U	NA		76	U	NA	
1,2,4-Trichlorobenzene		60	U	NA		2000	U	NA		76	U	NA	
Naphthalene		60	U	NA		2000	U	NA		50	J	NA	
4-Chloroaniline		60	U	NA		2000	U	NA		76	U	NA	
Hexachlorobutadiene		60	U	NA		2000	U	NA		76	U	NA	
4-Chloro-3-methylphenol		60	U	NA		2000	U	NA		76	U	NA	
2-Methylnaphthalene		60	U	NA		2000	U	NA		7	J	NA	
Hexachlorocyclopentadiene		60	U	NA		2000	U	NA		76	U	NA	

*= Outside of EPA CLP QC limits.

Cust ID:	MW-1		MW-1		MW-2		MW-2		MW-3		MW-3	
RFW#:	001		001 DL		002		002 DL		003		003 DL	
2,4,6-Trichlorophenol	60	U	NA		2000	U	NA		76	U	NA	
2,4,5-Trichlorophenol	300	U	NA		9800	U	NA		380	U	NA	
2-Chloronaphthalene	60	U	NA		2000	U	NA		76	U	NA	
2-Nitroaniline	300	U	NA		9800	U	NA		380	U	NA	
Dimethylphthalate	60	U	NA		2000	U	NA		76	U	NA	
Acenaphthylene	60	U	NA		2000	U	NA		76	U	NA	
2,6-Dinitrotoluene	60	U	NA		2000	U	NA		76	U	NA	
3-Nitroaniline	300	U	NA		9800	U	NA		380	U	NA	
Acenaphthene	60	U	NA		2000	U	NA		18	J	NA	
2,4-Dinitrophenol	300	U	NA		9800	U	NA		380	U	NA	
4-Nitrophenol	300	U	NA		9800	U	NA		380	U	NA	
Dibenzofuran	60	U	NA		2000	U	NA		9	J	NA	
2,4-Dinitrotoluene	60	U	NA		2000	U	NA		76	U	NA	
Diethylphthalate	60	U	NA		2000	U	NA		76	U	NA	
4-Chlorophenyl-phenylether	60	U	NA		2000	U	NA		76	U	NA	
Fluorene	60	U	NA		2000	U	NA		12	J	NA	
4-Nitroaniline	300	U	NA		9800	U	NA		380	U	NA	
4,6-Dinitro-2-methylphenol	300	U	NA		9800	U	NA		380	U	NA	
N-Nitrosodiphenylamine (1)	60	U	NA		2000	U	NA		76	U	NA	
4-Bromophenyl-phenylether	60	U	NA		2000	U	NA		76	U	NA	
Hexachlorobenzene	60	U	NA		2000	U	NA		76	U	NA	
Pentachlorophenol	300	U	NA		9800	U	NA		380	U	NA	
Phenanthrene	60	U	NA		2000	U	NA		11	J	NA	
Anthracene	60	U	NA		2000	U	NA		76	U	NA	
Di-n-Butylphthalate	60	U	NA		2000	U	NA		76	U	NA	
Fluoranthene	60	U	NA		2000	U	NA		76	U	NA	
Pyrene	60	U	NA		2000	U	NA		76	U	NA	
Butylbenzylphthalate	60	U	NA		2000	U	NA		76	U	NA	
3,3'-Dichlorobenzidine	120	U	NA		3900	U	NA		150	U	NA	
Benzo(a)anthracene	60	U	NA		2000	U	NA		76	U	NA	
Chrysene	60	U	NA		2000	U	NA		76	U	NA	
bis(2-Ethylhexyl)phthalate	60	U	NA		2000	U	NA		76	U	NA	
Di-n-Octyl phthalate	60	U	NA		2000	U	NA		76	U	NA	
Benzo(b)fluoranthene	60	U	NA		2000	U	NA		76	U	NA	
Benzo(k)fluoranthene	60	U	NA		2000	U	NA		76	U	NA	
Benzo(a)pyrene	60	U	NA		2000	U	NA		76	U	NA	
Indeno(1,2,3-cd)pyrene	60	U	NA		2000	U	NA		76	U	NA	
Dibenzo(a,h)anthracene	60	U	NA		2000	U	NA		76	U	NA	
Benzo(g,h,i)perylene	60	U	NA		2000	U	NA		76	U	NA	
Pyridine	53	J	NA		2400		NA		64	J	NA	

*= Outside of EPA CLP QC limits.

Cust ID:	MW-1	MW-1	MW-2	MW-2	MW-3	MW-3
RFW#:	001	001 DL	002	002 DL	003	003 DL
3-Picoline	E	2700	E	290000	E	4600
N,N-Dimethylacetamide	180	NA	E	850000	E	E
1-Methyl-2-pyrrolidinone	110	NA	12000	NA	160	NA

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

Roy F. Weston, Inc. - Gulf Coast Laboratories
SEMIVOLATILES BY GC/MS, SPECIAL LIST
Report Date: 12/05/91 12:59

RFW Batch Number: 9111G711 Client: Canonie Environmental Work Order: 0000-00-00-0000 Page: 2a

	Cust ID:	MW-3	Duplicate	Duplicate	Duplicate	SBLK	SBLK BS
Sample Information	RFW#:	003 DL	004	004 DL	004 DL	91GB0503-MB1	91GB0503-MB1
	Matrix:	WATER	WATER	WATER	WATER	WATER	WATER
	D.F.:	200	10.0	50.0	200	1.00	1.00
	Units:	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
Surrogate Recovery	Nitrobenzene-d5	D %	110 %	D %	D %	92 %	112 %
	2-Fluorobiphenyl	D %	126 * %	D %	D %	77 %	91 %
	Terphenyl-d14	D %	133 %	D %	D %	90 %	100 %
	Phenol-d5	D %	51 %	D %	D %	35 %	40 %
	2-Fluorophenol	D %	75 %	D %	D %	51 %	64 %
	2,4,6-Br3-phenol	D %	124 * %	D %	D %	94 %	108 %
Phenol		NA	24 J	NA	NA	10 U	31 %
bis(2-Chloroethyl)ether		NA	88 U	NA	NA	10 U	10 U
2-Chlorophenol		NA	88 U	NA	NA	10 U	67 %
1,3-Dichlorobenzene		NA	88 U	NA	NA	10 U	10 U
1,4-Dichlorobenzene		NA	88 U	NA	NA	10 U	75 %
Benzyl alcohol		NA	88 U	NA	NA	10 U	10 U
1,2-Dichlorobenzene		NA	88 U	NA	NA	10 U	10 U
2-Methylphenol		NA	88 U	NA	NA	10 U	10 U
bis(2-Chloroisopropyl)ether		NA	88 U	NA	NA	10 U	10 U
4-Methylphenol		NA	88 U	NA	NA	10 U	10 U
N-Nitroso-Di-n-propylamine		NA	88 U	NA	NA	10 U	87 %
Hexachloroethane		NA	88 U	NA	NA	10 U	10 U
Nitrobenzene		NA	88 U	NA	NA	10 U	10 U
Isophorone		NA	88 U	NA	NA	10 U	10 U
2-Nitrophenol		NA	88 U	NA	NA	10 U	10 U
2,4-Dimethylphenol		NA	37 J	NA	NA	10 U	10 U
Benzoic acid		NA	440 U	NA	NA	50 U	50 U
bis(2-Chloroethoxy)methane		NA	88 U	NA	NA	10 U	10 U
2,4-Dichlorophenol		NA	88 U	NA	NA	10 U	10 U
1,2,4-Trichlorobenzene		NA	88 U	NA	NA	10 U	84 %
Naphthalene		NA	55 J	NA	NA	10 U	10 U
4-Chloroaniline		NA	88 U	NA	NA	10 U	10 U
Hexachlorobutadiene		NA	88 U	NA	NA	10 U	10 U
4-Chloro-3-methylphenol		NA	88 U	NA	NA	10 U	82 %
2-Methylnaphthalene		NA	8 J	NA	NA	10 U	10 U
Hexachlorocyclopentadiene		NA	88 U	NA	NA	10 U	10 U

*= Outside of EPA CLP QC limits.

Cust ID:	MW-3	Duplicate	Duplicate	Duplicate	SBLK	SBLK BS
RFW#:	003 DL	004	004 DL	004 DL	91GB0503-MB1	91GB0503-MB1
2,4,6-Trichlorophenol	NA	88 U	NA	NA	10 U	10 U
2,4,5-Trichlorophenol	NA	440 U	NA	NA	50 U	50 U
2-Chloronaphthalene	NA	88 U	NA	NA	10 U	10 U
2-Nitroaniline	NA	440 U	NA	NA	50 U	50 U
Dimethylphthalate	NA	88 U	NA	NA	10 U	10 U
Acenaphthylene	NA	88 U	NA	NA	10 U	10 U
2,6-Dinitrotoluene	NA	88 U	NA	NA	10 U	10 U
3-Nitroaniline	NA	440 U	NA	NA	50 U	50 U
Acenaphthene	NA	20 J	NA	NA	10 U	96 %
2,4-Dinitrophenol	NA	440 U	NA	NA	50 U	50 U
4-Nitrophenol	NA	440 U	NA	NA	50 U	23 %
Dibenzofuran	NA	10 J	NA	NA	10 U	10 U
2,4-Dinitrotoluene	NA	88 U	NA	NA	10 U	90 %
Diethylphthalate	NA	88 U	NA	NA	10 U	10 U
4-Chlorophenyl-phenylether	NA	88 U	NA	NA	10 U	10 U
Fluorene	NA	56 J	NA	NA	10 U	10 U
4-Nitroaniline	NA	440 U	NA	NA	50 U	50 U
4,6-Dinitro-2-methylphenol	NA	440 U	NA	NA	50 U	50 U
N-Nitrosodiphenylamine (1)	NA	88 U	NA	NA	10 U	10 U
4-Bromophenyl-phenylether	NA	88 U	NA	NA	10 U	10 U
Hexachlorobenzene	NA	88 U	NA	NA	10 U	10 U
Pentachlorophenol	NA	440 U	NA	NA	50 U	68 %
Phenanthrene	NA	13 J	NA	NA	10 U	10 U
Anthracene	NA	88 U	NA	NA	10 U	10 U
Di-n-Butylphthalate	NA	88 U	NA	NA	10 U	10 U
Fluoranthene	NA	88 U	NA	NA	10 U	10 U
Pyrene	NA	88 U	NA	NA	10 U	94 %
Butylbenzylphthalate	NA	88 U	NA	NA	10 U	10 U
3,3'-Dichlorobenzidine	NA	180 U	NA	NA	20 U	20 U
Benzo(a)anthracene	NA	88 U	NA	NA	10 U	10 U
Chrysene	NA	88 U	NA	NA	10 U	10 U
bis(2-Ethylhexyl)phthalate	NA	88 U	NA	NA	10 U	10 U
Di-n-Octyl phthalate	NA	88 U	NA	NA	10 U	10 U
Benzo(b)fluoranthene	NA	88 U	NA	NA	10 U	10 U
Benzo(k)fluoranthene	NA	88 U	NA	NA	10 U	10 U
Benzo(a)pyrene	NA	88 U	NA	NA	10 U	10 U
Indeno(1,2,3-cd)pyrene	NA	88 U	NA	NA	10 U	10 U
Dibenzo(a,h)anthracene	NA	88 U	NA	NA	10 U	10 U
Benzo(g,h,i)perylene	NA	88 U	NA	NA	10 U	10 U
Pyridine	NA	71 J	NA	NA	10 U	10 U

*= Out 'de of EPA CLP QC limits.

Cust ID:	MW-3	Duplicate	Duplicate	Duplicate	SBLK	SBLK BS
RFW#:	003 DL	004	004 DL	004 DL	91GB0503-MB1	91GB0503-MB1
3-Picoline	NA	E	4900	NA	10 U	10 U
N,N-Dimethylacetamide	22000	E	E	27000	10 U	10 U
1-Methyl-2-pyrrolidinone	NA	200	NA	NA	10 U	10 U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

Cust ID: **SBLK BSD**

Sample Information

RFW#: **91GB0503-MB1**
Matrix: WATER
D.F.: 1.00
Units: UG/L

Surrogate Recovery	Nitrobenzene-d5	103	%
	2-Fluorobiphenyl	77	%
	Terphenyl-d14	88	%
	Phenol-d5	36	%
	2-Fluorophenol	55	%
	2,4,6-Br3-phenol	97	%

Phenol	27	%
bis(2-Chloroethyl)ether	10	U
2-Chlorophenol	60	%
1,3-Dichlorobenzene	10	U
1,4-Dichlorobenzene	60	%
Benzyl alcohol	10	U
1,2-Dichlorobenzene	10	U
2-Methylphenol	10	U
bis(2-Chloroisopropyl)ether	10	U
4-Methylphenol	10	U
N-Nitroso-Di-n-propylamine	76	%
Hexachloroethane	10	U
Nitrobenzene	10	U
Isophorone	10	U
2-Nitrophenol	10	U
2,4-Dimethylphenol	10	U
Benzoic acid	50	U
bis(2-Chloroethoxy)methane	10	U
2,4-Dichlorophenol	10	U
1,2,4-Trichlorobenzene	70	%
Naphthalene	10	U
4-Chloroaniline	10	U
Hexachlorobutadiene	10	U
4-Chloro-3-methylphenol	69	%
2-Methylnaphthalene	10	U
Hexachlorocyclopentadiene	10	U

*= Outside of EPA CLP QC limits.

Cust ID: **SBLK BSD**

RFW#: **91GB0503-MB1**

2,4,6-Trichlorophenol	10	U
2,4,5-Trichlorophenol	50	U
2-Chloronaphthalene	10	U
2-Nitroaniline	50	U
Dimethylphthalate	10	U
Acenaphthylene	10	U
2,6-Dinitrotoluene	10	U
3-Nitroaniline	50	U
Acenaphthene	83	%
2,4-Dinitrophenol	50	U
4-Nitrophenol	19	%
Dibenzofuran	10	U
2,4-Dinitrotoluene	79	%
Diethylphthalate	10	U
4-Chlorophenyl-phenylether	10	U
Fluorene	10	U
4-Nitroaniline	50	U
4,6-Dinitro-2-methylphenol	50	U
N-Nitrosodiphenylamine (1)	10	U
4-Bromophenyl-phenylether	10	U
Hexachlorobenzene	10	U
Pentachlorophenol	54	%
Phenanthrene	10	U
Anthracene	10	U
Di-n-Butylphthalate	10	U
Fluoranthene	10	U
Pyrene	83	%
Butylbenzylphthalate	10	U
3,3'-Dichlorobenzidine	20	U
Benzo(a)anthracene	10	U
Chrysene	10	U
bis(2-Ethylhexyl)phthalate	10	U
Di-n-Octyl phthalate	10	U
Benzo(b)fluoranthene	10	U
Benzo(k)fluoranthene	10	U
Benzo(a)pyrene	10	U
Indeno(1,2,3-cd)pyrene	10	U
Dibenzo(a,h)anthracene	10	U
Benzo(g,h,i)perylene	10	U
Pyridine	10	U

*= Out de of EPA CLP QC limits.

Cust ID: **SBLK BSD**

RFW#: **91GB0503-MB1**

3-Picoline	10	U
N,N-Dimethylacetamide	10	U
1-Methyl-2-pyrrolidinone	10	U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

December 1991 90-280-10

GROUND WATER SAMPLING AND ANALYSIS PLAN CHICAGO RECYCLING CENTER SAFETY-KLEEN CORP. CHICAGO, ILLINOIS

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GROUND WATER SAMPLING AND ANALYSIS PLAN
CHICAGO RECYCLE CENTER
SAFETY-KLEEN CORP.
CHICAGO, ILLINOIS

1.0 INTRODUCTION

This Ground Water Sampling and Analysis Plan has been prepared for Safety-Kleen Corporation (Safety-Kleen) by Canonie Environmental Services Corp. (Canonie) for submittal and review by the Illinois Environmental Protection Agency (IEPA).

In April 1991, Safety-Kleen decontaminated and removed four aboveground storage tanks located in Tank Farm No. 3, shown on Figure 1 at the Chicago Recycle Center in Chicago, Illinois, in accordance with the approved Partial Closure Plan dated May 1990.

Three soil sampling events have been conducted at Tank Farm No. 3. In February 1991, prior to removal of the tanks (pre-closure), Canonie collected soil samples from within the storage tank dike containment area to evaluate the potential for discharge from the tanks during the period of former operation. The second sampling event, conducted by RMT, Inc. (RMT) of Madison, Wisconsin, occurred in May 1991 after the tanks had been removed (post-closure) and included a soil gas survey and installation of monitoring wells in and around the tank farm. The third sampling event was conducted in October 1991 which included the installation of three additional ground water monitoring wells, completion and analysis of an additional 10 soil borings, and ground water sampling and analyses. The purpose of this sampling event was to supplement previous investigations and to more accurately define the vertical and horizontal extent of the soil contamination in accordance with the IEPA-approved closure plan modification dated August 30, 1991. Existing monitoring well locations and soil borings are shown on Figure 1.

Results of these investigations indicate that concentrations of trichloroethene (TCE), toluene, tetrachloroethene (PCE), and other volatile and semivolatile organic compounds

(VOCs and SVOCs) are present in the soils and ground water within and immediately adjacent to the tank farm.

This document addresses sample collection and analysis procedures and techniques to be utilized for all future ground water sampling activities relevant to closure of Tanks T-190 through T-193. Section 2.0 of this plan describes procedures for ground water monitoring well purging and sampling. Section 3.0 discusses the laboratory chemical analytical methods which may be used. Quality assurance (QA) procedures are discussed in Section 4.0, and Section 5.0 covers data reporting.

2.0 GROUND WATER MONITORING WELL SAMPLING

The objectives of the ground water sampling and analysis plan are to quantify the magnitude of ground water contamination attributable to the tank closure Units T-190 through T-193, to establish the quality of ground water in the vicinity of the tank closure units formerly located in Tank Farm No. 3, and to gather data required to establish the hydrogeologic characteristics of the site. The following sections describe how the goals of this ground water sampling program will be accomplished.

All monitoring well installation and ground water sampling activities will be conducted in accordance with the revised site health and safety plan included as Appendix A of this report.

2.1 Ground Water Sampling Procedures

The ground water monitoring wells will be sampled within two weeks of installation during future supplemental sampling events. The following sections describe the well sampling procedures.

2.1.1 Water Level Determination

Prior to purging and sampling the monitoring wells, ground water levels will be obtained from all wells on-site. Water levels will be obtained with an electronic water level probe, Slope Indicator Company Model 51453 or equivalent, and recorded in the site field book. A Canonie engineer or qualified surveyor will determine the height of the well casing elevation by conventional survey methods to within 0.01 feet in order to establish ground water gradient.

Water level readings will be recorded on a form which notes the date and time the level readings are taken, the well identification number of designation, the elevation of the top

of the well casing, the elevation of the adjacent ground, and the depth to water level, recorded as the depth from the top of the casing to water level surface.

In order to prevent cross-contamination of monitoring wells, the probe will be thoroughly cleaned by flushing equipment components with Alconox® and then thoroughly rinsing the components with fresh deionized water. Alternatively, the probe may be steam cleaned.

2.1.2 Well Purging and Sampling

All wells will be developed no sooner than 24 hours following the initial well installation activities. More than one week and less than two weeks following development of the monitoring wells, Canonie will conduct well purging and sampling. Initially, monitoring wells will be purged by removing three to five casing volumes of ground water, where one casing volume (Vw) is determined by one of the following equations:

$$Vw = 0.017\ (d^2)\ W \text{ cubic feet}$$

or

$$Vw = 0.12\ (d^2)\ W \text{ gallons}$$

where d is the well casing diameter in inches and W is the depth of water in the well casing measured in feet. Note that W must be calculated by subtracting the measured depth to water in the well from the total well casing length reported on the well installation details. Purging methods, volumes, times, and any other pertinent information will be recorded by the sampling team. In the event that well recovery time following purging is very slow (i.e., 24 hours), sampling will be delayed until the following day.

2.1.2.1 Equipment

Prewashed, decontaminated sample bottles, appropriate for chemical analyses according to U.S. Environmental Protection Agency (EPA) will be supplied by a qualified IEPA-approved laboratory. Sample bottles and bottle caps will be protected from contamination between the time of drying and actual usage at the sample site.

Monofilament nylon line, which will be discarded after each use, will be used for lowering and raising equipment in the wells. No absorbent materials (e.g., rope or cord) are to be placed in the wells. Disposable surgical-type gloves will be worn while sampling and shall be discarded after each well sample is completed.

2.1.2.2 Equipment Cleaning

Where applicable, any equipment surface which may come in contact with the ground water will be cleaned to prevent the introduction of spurious contaminants. Cleaning will be accomplished by flushing, washing, or wiping equipment components with Alconox® and then thoroughly rinsing the components with fresh deionized water. Care will be exercised to assure that normally wetter interior surfaces of pumps, hoses, tubes, or other components are properly cleaned. Rinse waters will be collected in drums and retained on-site for future treatment of disposal. If well purging activities remove all ground water from the well so that it is "dry," then no further purging is necessary. Purging will be conducted by use of a Foulz Pump, a high-density polyethylene bailer, or a stainless-steel bailer. The bailer or pump assemblages which enter the well will be decontaminated after each use; new bailer cords will be used for each well. Purge water and decontamination water will be containerized and disposed of by Safety-Kleen.

Upon completion of well purging, ground water sampling will be conducted. Samples will be collected with an appropriately sized high-density polyethylene (HDPE) bailer. Disposable nylon cord will be used to retrieve the bailer during sampling. Both the nylon

cord and HDPE bailer will be properly disposed of upon completion of each well sampling.

The ground water samples will be placed in the appropriate containers supplied by the laboratory. Each sample bottle will be labeled with a selected numerical or alphanumerical designation to identify the sample for tracking purposes. Additional information to be shown on the bottle label will be project number, date, sampling time, and the sampler's initials.

One trip blank per sample cooler will be sent to the laboratory to assure sample integrity during shipment. Additionally, one equipment blank per monitoring well will be obtained. The equipment blank will consist of a sample of distilled water washed over the decontaminated bailer prior to obtaining a ground water sample.

2.1.3 Ground Water Sample Custody, Preservation, and Shipping Procedures

After collecting samples, the bottles will be immediately placed in an iced cooler. Sample designations, requested analyses, and any other pertinent information will be recorded on a chain-of-custody form. A sample chain-of-custody form is included in Appendix A. The chain-of-custody form will be signed and placed in the cooler with the samples. The cooler will then be sealed and transported to the laboratory. Chain-of-custody and shipping procedures are discussed in Appendix B.

2.1.4 Laboratory Chemical Analysis of Ground Water Samples

Samples will be chemically analyzed by a qualified IEPA-approved laboratory. Ground water samples sent to the laboratory for chemical analysis will be analyzed for the TCL constituents presented in Table 1. All procedures for analyses will be in accordance with SW-846 Third Edition (1986).

2.1.5 Sample Numbering Procedures

Maintaining proper records is a significant aspect of the sample collection program. The entire sampling process is designed and will be conducted in a manner that will provide samples suitable for the intended analyses. At the time samples are obtained, the following information will be recorded by the sampling team:

1. Sample site location (e.g., boring, ground water well);

2. Sample depth interval;

3. Date and time of sampling;

4. Sample identification number;

5. Identification of person taking sample;

6. Analyses requested.

Sample identification numbers will be assigned based on the location, sample matrix, and sample sequence number.

Sample containers should be labeled using the labels supplied by the laboratory and each sample given a unique number. The numbering should conform to the following numbering scheme:

90280 - W2 - AAA

Where: 90280 - Canonie job number;
W2 - Well number;
AAA - Analyses type (VOA or BNA).

2.1.6 Detection of Immiscible Layers

The presence of immiscible layers will be determined at both the top and bottom of the water column each time the well is sampled. If an immiscible layer is detected, its thickness shall be recorded and a sample collected and analyzed. This measurement will be made utilizing a Flexi-Dip MMC interface probe or equivalent.

3.0 ANALYTICAL PROCEDURES

Ground water at the site will be analyzed to determine if releases from the closure units are adversely impacting ground water quality. As the chemicals recycled at the site are well known, the analytical method(s) will be selected to detect chemicals known to be present at the site (and their derivatives) that may be present in the ground water.

3.1 Laboratory Chemical Analyses

All analytical methods applicable to this site will be performed in accordance with U.S. Environmental Protection Agency (EPA) Publication SW-846, Test Methods for Evaluating Solid Waste, Physical and Chemical Methods (3rd edition, 1986). Based on previous data at this site, EPA Methods 8240 and Method 8270 will detect all the organic chemical constituents which may be present at the site. Samples from the initial sampling event will be analyzed for all components detectable by each of these methods. Following receipt of the data, the Target Compound List (TCL) may be reduced so that nondetectable compounds are not reported in future events. The initial TCL is shown in Table 1.

3.2 Sample Holding Times

The maximum holding time for volatile organic hydrocarbon analyses of ground water samples is 14 days. The maximum holding time for semivolatile analyses prior to extraction is 7 days. Extracts of semivolatile ground water samples may be held a maximum of 40 days.

3.3 Field Screening Analyses

At a minimum, field parameters for pH, temperature, and specific conductance shall be collected at the beginning of purge, during the middle of purge, and at the end of purging. Samples shall be measured quickly with as little contact with the atmosphere as possible. Field notes taken at this time will include the appearance of purged water including its color, turbidity, and odor.

Conductivity will be measured to three significant figures in micromhos per centimeter at 25°C; pH data will be measured to plus or minus 0.1 unit; and ground water temperatures will be measured to within plus or minus 0.1°C.

3.4 Data Quality Objectives

Data quality objectives for field analyses will be Level I or II. Data quality objectives for laboratory analyses will be Level III or IV.

4.0 QUALITY ASSURANCE PROCEDURES

4.1 Equipment Calibration

Calibration of field equipment is intended to check the functionality of the equipment and be performed prior to collecting any samples at the site. The general procedures are listed below:

pH meter -Specific calibration steps depend on the exact pH meter used in the Generally calibration begins with immersing the pH probe in a neutral (pH 7.0) calibration solution. (Temperature compensated meters with separate temperature probes require that the temperature probe also be immersed in the solution.) The meter zero adjustment is operated until the meter scale reads 7.0. The probe is then immersed in a second calibration solution dependent upon the expected pH range of the measurement. If pH values in the range 7.0-10.0 are expected a 10.0 pH solution will be used to calibrate the slope/span of the meter. If pH values less than 7.0 are anticipated the second solution will be pH 4.0. With pH probe immersed in the second pH solution the slope adjustment is operated until the meter reads the appropriate value.

The zero and slope adjustments are somewhat linked so the above steps of setting zero and slope may be repeated until the meter range is set accurately.

Conductivity probes - Calibration procedures vary. Some meters require a span setting using a solution of known conductivity; other microprecision-controlled meters require internal calibration with known resister values. Calibration of conductivity meters will be performed in accordance with the original equipment manufacturer's instructions.

Temperature probes - Are checked for operation using boiling water and ice/water mix. The meter should read 100°C/212°F in the boiling water and 0°C/32°F in the ice/water mixture. The meter may be checked for accuracy against a standard laboratory thermometer prior to use.

Water level probes - Although no calibration is possible in the field, the electrically operated water level probes should be checked for proper operation. The buzzer or light should operate as soon as the electrode touches a water surface. Failure to operate properly could be due to corroded/dirty electrodes and/or bent electrodes. Corrective actions are limited to cleaning the electrodes and/or straightening any bent electrodes.

4.2 Decontamination Procedures

To ensure that sampling equipment is not a source of cross-contamination during well sampling, single-use/disposable sampling equipment is preferred. Items that are not disposable and have to contact the samples on well water will be decontaminated by the following procedure:

1. An Alconox™ wash will be used to remove dirt and other grass contamination. The water from initial soapy wash should be shaken off prior to the second step in the decontamination process.

2. The second step includes a rinse in clean potable water from an approved supply. Once rinsing is complete and excess water is shaken off, the item is ready for the third step.

3. The final step in the decontamination process is a rinse with deionized water. This water must be collected for disposal. Therefore, the item being rinsed must not be sent down in the container.

4. Once decontaminated, the item should be wrapped in clear plastic until needed or used immediately.

4.3 Sample Quality Assurance

To ensure the integrity of the ground water analytical data the following QA/QC procedures will be employed at the site.

A trip blank will be provided to the laboratory for each cooler required for the project. This trip blank(s) will be analyzed for VOCs along with the actual ground water samples. The purpose of the trip blank is to ensure that the samples were not contaminated during transport to the laboratory.

A duplicate sample will be obtained from one well (preferably downgradient) to check the accuracy of the laboratory analyses. This sample will be a split sample, i.e. half of each bailer accuracy obtained will be used for the original sample and the other half used for the duplicate sample.

Disposable sampling equipment is planned for this project therefore, equipment blanks will not be taken.

Laboratory sample analyses will conform with the QA/QC protocols specified by the specific methodology utilized from SW-846 (Third Edition, 1986).

5.0 DATA REPORTING

Upon receipt of the analytical data, a letter report will be prepared which includes the following:

1. Background water quality (upgradient monitoring well or well point);
2. Comparison of background data versus downgradient data;
3. Map of current water level surface;
4. Map of previous water level surface;
5. Table of any listed compounds that exceed their applicable respective Ground Water Protection Standard or Safety Drinking Water Act Standards;
6. Conclusions;
7. Recommendations.

TABLE 1

TARGET COMPOUND LIST
CHICAGO RECYCLE CENTER
SAFETY-KLEEN CORP.
CHICAGO, ILLINOIS

Method 8240

Vinyl Chloride
Chloroethane
Carbon Disulfide
1,1-Dichloroethene
1,1-Dichloroethane
1,2-Dichloroethene (total)
Chloroform
2-Butanone
1,1,1-Trichloroethane
Carbon Tetrachloride
Trichloroethene
Benzene
Tetrachloroethane
Toluene
Ethylbenzene
Xylene
Trichlorotriofluoroethane
Tetrahydrofuran

Method 8270

Pyridine
B-Picoline
N,N-Dimethylacetamide
1-Methyl-2-Pyrolidinane

DRAWING NUMBER 90-280-B5

N

WEST 42nd STREET

FIRE SPRINKLER CONNECTION

GATE

GATE

PROCESS BUILDING No. 1

TANK FARM No. 1

TRUCK STATION No. 2

TRUCK STATION No. 3

MW-3

MW-2

B6

P1

B5

TANK FARM No. 2

TANK FARM No. 3

B4

P4

MW-1

P2

B3

B8

B-1

P3

B2

GATE

CONTAINER STORAGE AREA No. 1

TRUCK STATION No. 1

TANK FARM No. 5

PROCESS BUILDING No.2

TANK FARM No. 4

PUMP HOUSE

WEST 43rd STREET

LEGEND:

- PROPERTY LINE
- FENCE
- RAILROAD
- UTILITY POLE
- LIGHT POLE
- FIRE HYDRANT
- B3 SOIL BORING
- MW-1 MONITORING WELL
- P1 PIEZOMETER

APPROXIMATE SCALE

60 0 60 FEET

SOIL BORING AND MONITORING WELL LOCATION PLAN
CHICAGO RECYCLE CENTER
CHICAGO, ILLINOIS

PREPARED FOR

SAFETY-KLEEN CORP.

Canonie Environmental

No.	DATE	ISSUE / REVISION	DWN. BY	CK'D BY	AP'D BY
2	12-6-91	ISSUED TO CLIENT AND AGENCY	GWB	TJA	PWL
1	12-5-91	ISSUED FOR REVIEW	SAK	TJA	PWL

REFERENCES:
- SAFETY KLEEN CORP., ELGIN ILLINOIS, DRAWING 88-62000-00, DATED 1987 REVISION 0.

DATE: 11-17-91	FIGURE 1	DRAWING NUMBER 90-280-B5
SCALE: AS SHOWN		

2

APPENDIX A

SITE HEALTH AND SAFETY PLAN

July 1991 90-280-10

CANONIE ENVIRONMENTAL SERVICES CORP.
SHORT-TERM PROJECT HEALTH & SAFETY PLAN
SAFETY-KLEEN CORP.
CHICAGO RECYCLE CENTER

Regional Health and Safety Coordinator Approval: (Pre) MGL Date 7-10-91
(Post)___ Date____

CanonieEnvironmental

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Site Name: Safety-Kleen Corp., Chicago Recycle Center

Project Number: 90-280-03

Project Duration: Two weeks maximum

Site Address: 1445 West 42nd Street
Chicago, IL 60609

Site Telephone: (312) 247-2828

Directions to the Site (See Map - Appendix B):

Exit I-94 north at Garfield. Turn west on Garfield. Follow Garfield to Ashland Avenue. Turn north (right) onto Ashland. The site is on the right one and one-half miles at 42nd Street.

1.0 Introduction and Training and Medical Monitoring Requirements

This document describes the health and safety guidelines developed for the Safety-Kleen Corporation (Safety-Kleen) Site to protect on-site personnel, visitors, and the public from physical harm and exposure to hazardous materials or wastes. The procedures and guidelines contained herein were based upon the best available information at the time of the plan's preparation. Specific requirements will be revised when new information is received or conditions change. A written amendment will document all changes made to the plan. Any amendments to this plan will be included in Appendix A. Where appropriate, specific Occupational Safety and Health Administration (OSHA) standards or other guidance will be cited and applied.

The Canonie Environmental Services Corp. (Canonie) site safety officer (SSO) or designated representative shall be responsible for informing all individuals entering the exclusion zone or decontamination (DECON) zone of the contents of this plan and ensuring that each person signs the Safety Plan Acknowledgment Form attached to this health and safety plan (HASP). By signing the Safety Plan Acknowledgment Form, individuals are documenting that they have read the HASP or had it explained to them by the SSO, and they are aware of the presence of specific hazards on-site and the policies and procedures required to minimize exposure or adverse effects of site hazards.

All personnel (including subcontractors and visitors) entering the exclusion zone or DECON zone and conducting intrusive activities where there is a potential for contact with site contaminants must have completed training requirements for hazardous waste site work in accordance with OSHA 29 Code of Federal Regulations (CFR) 1910.120. Documentation of training requirements is the responsibility of each employer. However, written documentation verifying compliance with 29 CFR 1910.120 (e)(3), (e)(4) [as applicable] and (e)(8) must be submitted to the SSO prior to entering the exclusion zone.

Site-specific training will be conducted prior to initiating field activities. It will address emergency procedures, site control, and provisions of this HASP. The SSO is responsible for ensuring that all personnel receive the site-specific training prior to entering the exclusion zone.

Additionally, the Safety-Kleen Recycle Center is an operating facility. The Canonie site engineer will attend orientation training at the facility. At a minimum, Canonie personnel shall comply with the safety and operating guidelines of the Safety-Kleen Facility and the policies set forth in this HASP. The site engineer shall be responsible for informing Canonie personnel of the Safety-Kleen Facility's procedures and policies and ensuring adherence to those policies as well as the policies established in this HASP.

All personnel (including subcontractors and visitors) entering the exclusion zone or DECON zone and conducting intrusive activities where there is a potential for contact with site contaminants must have completed appropriate medical monitoring requirements required under OSHA 29 CFR 1910.120(f). Documentation of medical monitoring is the responsibility of each employer. However, written documentation verifying compliance must be submitted to the SSO prior to entry into the exclusion zone.

2.0 Canonie Employees: Roles and Responsibilities

All key personnel related to on-site activities and their responsibilities are presented below.

Engineer-Site Safety Officer - To Be Determined - The SSO is responsible for on-site activities, including implementation of the HASP and work plan, oversight and implementation of air monitoring and air sampling programs on-site, quality assurance, and completion of any written amendments to this plan. The SSO has the authority to shut down site operations if unsafe conditions are present. The SSO reports to the construction superintendent and the regional health and safety coordinator.

Regional Health and Safety Coordinator - Margaret A. Skimina - The off-site regional health and safety coordinator is responsible for the overall health and safety of personnel conducting work associated with this project. Any significant changes in site conditions/operations require a written amendment prepared by the SSO and authorized either verbally or in writing by the regional health and safety coordinator.

3.0 Canonie Subcontractors: Roles and Responsibilities

Exploration Technology, Inc. of Madison, Wisconsin will be performing drilling activities. During soil boring and well installation work, there is potential for contact with site contaminants. All persons operating drill rigs will be required to meet the medical monitoring and training requirements of OSHA 29 CFR 1910.120.

4.0 Site History and Descriptions

The site is part of the former Chicago Union Stockyards; zoning is M5. Since the stockyards closed, the area has reverted to light and heavy industrial use. Residential areas are located one-quarter mile west of the facility.

The site was originally constructed by Custom Organics, who operated a facility from 1969 to 1985, when Safety-Kleen acquired Custom Organics. Both owners, Custom Organics and Safety-Kleen, operate(d) the facility to recycle used solvents and oil wastes. Wastes accepted include organic acids, chlorinated and fluorinated hydrocarbons, amines, alcohols, aliphatic and aromatic compounds, waste oils, and paint wastes. Recovered products are either sold back to customers by Safety-Kleen or marketed as recovered solvent.

5.0 Description of Field Work to be Performed

Eight borings will be completed to 15 feet. Most borings will be sampled at various intervals for select chemicals listed in Table 1. Additionally, three stainless-steel monitoring wells will be installed in boreholes. All monitoring wells will be developed by pump or bailer.

One week following well installation and development, the ground water will be sampled and analyzed for the chemicals listed in Table 1.

All borehole cuttings will be left on-site in the area of Tank Farm No. 3. Water from purging, sampling, and decontamination will be disposed of by Safety-Kleen.

6.0 Chemical Hazards

The following list provides a summary of the health hazards associated with the on-site contaminants which produce the highest risk of exposure. Additionally, material safety data sheets (MSDSs) and/or chemical information are provided in Appendix D of the April 19, 1991 HASP.

It should be noted that hexachlorobutadiene (HCBD) is a toxic chemical with a low American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value - Time-Weighted Average (TLV-TWA). It is present in very small amounts on-site (part-per-billion range in soils). Every effort will be made to protect against exposure to HCBD through the use of chemically resistant clothing and air-purifying respirators (APRs).

Analytical results from soil samples taken beneath each tank in a previous phase of work at the site indicate the presence of the compounds listed below. In addition to the compound, the ACGIH TLV-TWA and the OSHA permissible exposure limit (PEL) have been provided for all compounds for which they have been established.

	ACGIH TLV-TWA	OSHA PEL
Acenaphthylene	NE	NE
Anthracene	0.2 mg/m^3	0.2 mg/m^3
Azobenzene (Diphenyldiimide)	NE	NE
Benzene	10 ppm	1 ppm
Benzo (a)anthracene	0.2 mg/m^3	0.2 mg/m^3
Benzo (a)fluoranthene	0.2 mg/m^3	0.2 mg/m^3
Benzo [g,h,i]perylene	NE	NE
Benzo (a)pyrene	0.2 mg/m^3	0.2 mg/m^3
Benzoic Acid	NE	NE
Chlorobenzene	75 ppm	75 ppm
Chloroform	10 ppm	2 ppm
Chrysene	0.2 mg/m^3	0.2 mg/m^3
Dibenzo [a,h] anthracene	0.2 mg/m^3	0.2 mg/m^3
Dibenzofuran	NE	NE
(para) 1,4-Dichlorebenzene	75 ppm	75 ppm
(ortho) 1,2-Dichlorobenzene	50 ppm	50 ppm
1,1-Dichlorethane	200 ppm	NE
Dichloroethene	5 ppm	1 ppm
2,4-Dimethylphenol	NE	NE
Ethylbenzene	100 ppm	100 ppm
Fluoranthene	0.2 mg/m^3	0.2 mg/m^3
Fluorene	0.2 mg/m^3	0.2 mg/m^3
Hexachlorobutadiene	0.02 ppm	0.02 ppm
Indeno [1,2,3-c,d] pyrene	0.2 mg/m^3	0.2 mg/m^3
Methylene Chloride	50 ppm	500 ppm
Methyl Heptane	NE	NE
2-Methyl Naphthalene	NE	NE
2-Methylphenol	5 ppm	5 ppm
3-Methylphenol	5 ppm	5 ppm
4-Methylphenol	5 ppm	5 ppm
1-Methyl-2-phyrolidinone	NE	NE
Methyl pyridine isomers	NE	NE
Naphthalene	10 ppm	10 ppm

	ACGIH TLV-TWA	OSHA PEL
Octane	300 ppm	300 ppm
Phenanthrene	0.2 mg/m^3	0.2 mg/m^3
Pyrene	0.2 mg/m^3	0.2 mg/m^3
Pyridine	5 ppm	5 ppm
Tetrachloroethene	50 ppm	25 ppm
Toluene	100 ppm	100 ppm
1,1,1-Trichlorethane	350 ppm	350 ppm
Trichloroethene	50 ppm	50 ppm
1,1,2-Trichlorotrifluorethane	1000 ppm	1000 ppm
Xylene	100 ppm	100 ppm

Notes:

NE = Not Established
ppm = Parts Per Million

7.0 Description of Levels of Protection

The SSO will evaluate personal protective equipment (PPE) performance specifications relative to each specific task. Task-specific PPE appropriateness for each level of protection will be continually monitored by the SSO or his/her designee.

7.1 Level D Protection Shall Be Used When:

1. The atmosphere contains no known hazard.

2. Concentrations of airborne contaminants are less than the acton levels specified in Section 9.0.

3. Work functions preclude splashes, immersion, or the potential for unexpected inhalation of or contact with hazardous concentrations of harmful chemicals.

7.1.1 Level D Protection Equipment Includes, But Is Not Limited to:

1. Standard work uniforms, Tyvek™, or coveralls as needed;
2. Steel-toed safety work boots and boot covers at all times;
3. Inner and outer gloves as needed;
4. Safety glasses at all times;
5. Full-face splash shield and rain gear as needed;
6. Hard hat at all times;
7. Hearing protection in the presence of heavy equipment.

7.2 Level C Protection Shall Be Used When:

1. Skin protection is required, eye-splash protection is required, and respiratory protection is required.
2. The types of air contaminants have been identified and an APR is available that will remove contaminants.
3. Concentrations of airborne contaminants are within the action levels specified in Section 9.0.
4. Hazardous levels of materials are present or are being handled.
5. Direct-reading instruments indicate the need for Level C.

6. The SSO indicates Level C is required.

7.2.1 Level C Protective Equipment Includes, But Is Not Limited to:

1. Chemical-resistant coveralls (Tyvek™ or Saranex™) and rain gear for splash as needed;

2. Steel-toed work boots;

3. Chemical-resistant, steel-toed boots or disposable boot covers over steel-toed work boots: neoprene, latex, or equivalent;

4. Disposable inner gloves: nitrile;

5. Disposable outer gloves: chemical-resistant nitrile or as determined by SSO;

6. Full-face APR;

7. Chemical cartridge or canister: combination organic type with a high-efficiency particulate (HEPA) filter;

8. Hard hat;

9. Ankles/wrists taped with duct tape.

7.3 Level B Protection Shall Be Used When:

1. Concentrations of chemicals in the air are immediately dangerous to life and health or above the maximum use limit of an APR with full-face mask.

2. Concentrations of airborne contaminants are within the action levels specified in Section 9.0.

3. The activity or the SSO requires it.

7.3.1 Level B Protective Equipment Includes, But Is Not Limited to:

1. Chemical-resistant coveralls: Saranax™ or polylaminated Tyvek™;

2. Chemical-resistant steel-toed boots or disposable boot covers over steel-toed work boots: neoprene, latex, or equivalent;

3. Disposable inner gloves: nitrile;

4. Disposable outer gloves: chemical-resistant nitrile;

5. Supplied air pressure-demand SCBA or airline system with five-minute egress bottle;

6. Hard hat;

7. Ankles/wrists taped with duct tape.

Note: use of Level B PPE requires that one person must be available as backup ready to provide emergency assistant. Level B work shall never be conducted alone. Personnel wearing Level B protection shall only enter the exclusion zone when accompanied by a buddy.

8.0 Description of Hazards and SOPs Associated With Each Field Activity

Standard Operating Procedures

The following standard operating procedures (SOPs) will be in effect during work activities to minimize potential hazards:

1. Proper construction safety practices, in accordance with all applicable sections of OSHA 29 CFR 1910 and 1926, shall be used.

2. Trained, experienced personnel shall be used to minimize accident injury potential.

3. Clean, tidy work areas shall be maintained to reduce slip/trip/fall hazards.

4. Air monitoring, as outlined in the site HASP and work plan, shall be conducted to reduce contaminant exposure potential. Note: Action levels and protective equipment guidelines, as indicated in the site HASP, will be followed.

5. Personnel shall be instructed to lift heavy objects by placing weight on the legs, rather than on the back, to reduce potential for back injury.

Hazards and SOPs Associated With Soil Sampling and Well Installation

Concrete containment dikes will be demolished, and the concrete stockpiled and then sampled.

Hazards:

1. Potential for inhalation, absorption, contact, and ingestion of contaminated materials;

2. Heavy equipment and general construction hazards;

3. Occupational noise exposure;

4. Potential slip/trip/fall hazards;

5. Overhead and underground utility hazards.

SOPs:

1. Level D PPE at a minimum, including gloves, shall be worn during concrete drilling and sampling activities unless air monitoring data indicate otherwise.

2. Visible emissions shall require Level C PPE.

3. Trained, experienced drillers shall be used, and activities shall be performed in accordance with OSHA 29 CFR 1910.120 and 1926.

4. Hearing protection shall be worn during drilling activities.

5. Slip/trip/fall hazards will be minimized by staying alert and exercising caution.

6. Overhead utilities shall be located prior to drill rig entrance into soil sampling area.

9.0 Air Monitoring/Sampling and Action Levels

Air monitoring with a direct-reading organic vapor analyzer (OVA) shall be conducted periodically during soil sampling. Background for organic vapors will be established prior to initiating drilling activities each day and recorded on the air monitoring log daily

(Appendix C). These background levels will serve as a basis upon which daily action levels will be measured.

Air monitoring data will be recorded on the air monitoring log at a frequency to be determined by the SSO.

Action levels for work activities outside of confined spaces are established as follows:

Level of PPE	Organic Vapor Concentrations
D	Background
C	Background to 5 ppm above background
B	In excess of 5 ppm above background to 500 ppm above background

10.0 Description of Site Work Zones

The exclusion zone will be defined as an area within a 20-foot radius of the drilling rig. This area will be marked with yellow hazard tape. A DECON zone will be set up at the exit to the exclusion zone, and the support zone will be located outside of the taped-off area. These zones will be clearly defined by the SSO as site activities begin. These zones will also be cordoned off to restrict access.

11.0 Decontamination Equipment and Procedures

Large equipment and the drill rig decontamination will be accomplished using high-pressure, high-temperature washers. All liquids generated from decontamination activities shall be collected by Canonie and pumped and disposed of by Safety-Kleen.

Smaller equipment and tools will be decontaminated with Alconox™ solution and triple rinsed with distilled water.

PPE expendables will be collected, and disposal will be coordinated with Safety-Kleen. Personnel decontamination will be accomplised using trisodium phosphate (TSP).

12.0 Emergency Assistance Contact (Confirmed Before Site Visit):

Fire: 911

Police: 911

Ambulance: 911

Poison Control: (708) 681-3000 Westlake Community Hospital 24 Hours

Hospital: 471-5556 Holy Cross Hospital Emergency Room

13.0 Directions to the Hospital (See Map - Appendix B)

Turn south onto Ashland. Follow Ashland to West 63rd. Turn westward onto 63rd. Follow 63rd to California. Turn south onto California. Holy Cross Hospital is on the left about three-quarters of a mile down on California at 2701 West 68th Street.

14.0 Emergency Supplies On-Site

Fire extinguishers, first-aid kits, eye wash, and absorbent booms shall be available for on-site emergencies.

I have been informed, understand, and will abide by the procedures set forth in this Health and Safety Plan.

Printed Name	Signature	Representing	Date

TABLE 1

TARGET COMPOUND LIST
CHICAGO RECYCLE CENTER
SAFETY-KLEEN CORPORATION
CHICAGO, ILLINOIS

Compound Name	Compound Classification	Analysis Method: 8240	8240 and Library	8270	8270 and Library
Dimethylactamide	Semivolatile (TIC) 1				X
B-Picoline	Semivolatile (TIC) 1				X
Toluene	Volatile	X			
Methyl Chloride	Volatile	X			
Acetone	Volatile	X			
Pyridine	Semivolatile			X	
n-methly-2-Pyrolidone	Semivolatile (TIC) 1				X
Trichlorotrifluoroethane	Volatile (TIC) 1		X		
1,1,1-Trichloroethane	Volatile	X			
Trichloroethane	Volatile	X			
Tetrahydrofuran	Volatile (TIC) 1		X		
Perchloroethylene	Volatile	X			

Notes:

1. TIC: Tentatively Identified Compound

APPENDIX A

HASP AMENDMENTS

SITE SAFETY PLAN AMENDMENTS

SITE: SOIL TREATMENT HEALTH AND SAFETY PLAN

DATE: _____

TYPE OF AMENDMENT: _____

_____

_____

REASON FOR AMENDMENT: _____

_____

_____

ALTERNATE SAFEGUARD PROCEDURES: _____

_____

_____

_____

CHANGES IN PERSONNEL PROTECTIVE EQUIPMENT: _____

_____

_____

_____

_____ _____

Site Safety Officer Date

_____ _____

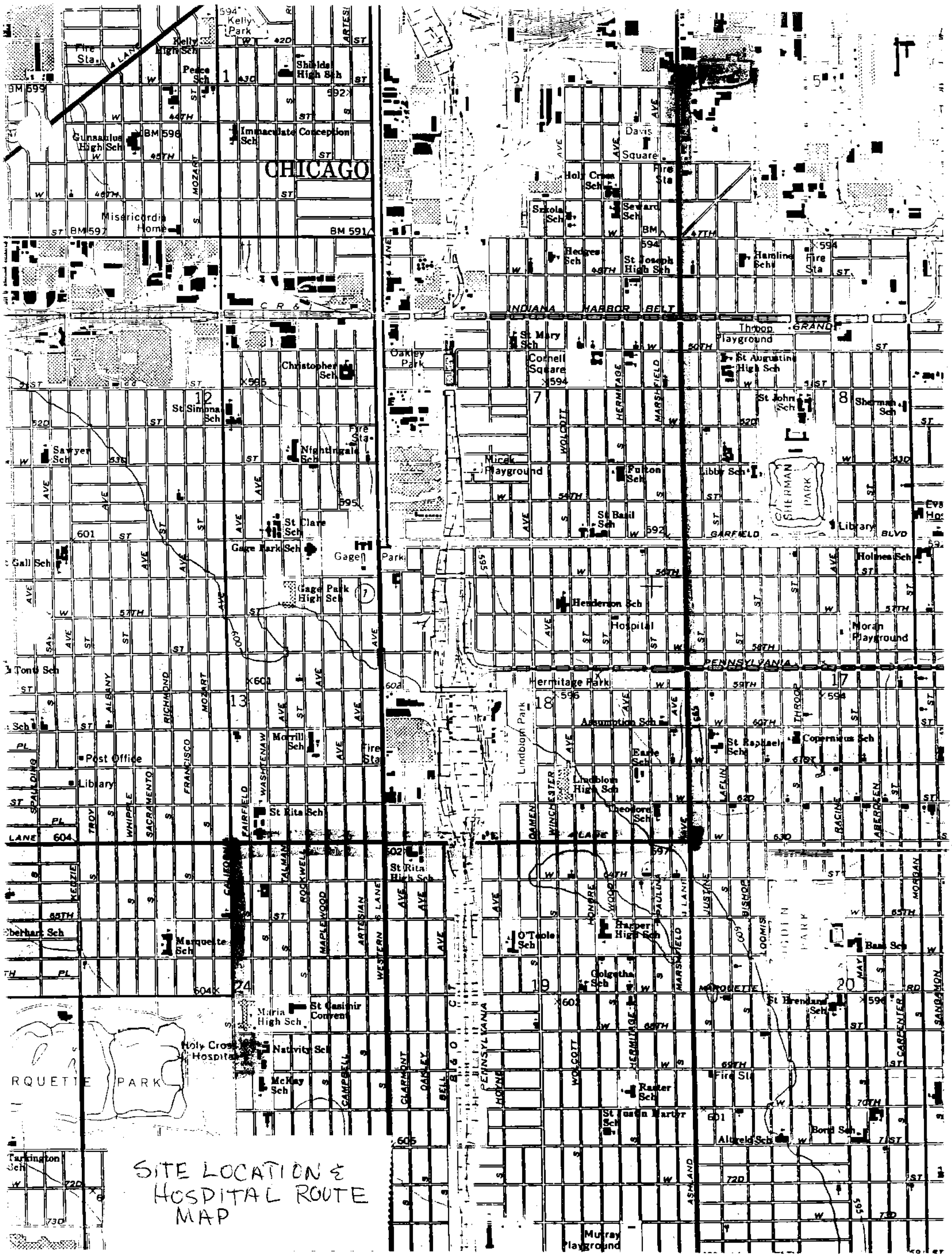
Operations Superintendent Date

_____ _____

Corporate Health & Safety Manager Date

APPENDIX B

HOSPITAL ROUTE MAP/SITE LOCATION MAP


SITE LOCATION & HOSPITAL ROUTE MAP
CHICAGO
Kelly Park
Kelly High Sch
Fire Sta.
Peace Sch
Shields High Sch
Gunsaulus High Sch
Immaculate Conception Sch
Misericordia Home
Davis Square
Holy Cross Sch
Seward Sch
Hedges Sch
St Joseph High Sch
Hamline Sch
INDIANA HARBOR BELT
Throop Playground
St Mary Sch
Oakley Park
Christopher Sch
Cornell Square
St Augustine High Sch
St John Sch
Sherman Sch
St Simons Sch
Sawyer Sch
Nightingale Sch
Micek Playground
Fulton Sch
Libby Sch
SHERMAN PARK
St Clare Sch
St Basil Sch
GARFIELD BLVD
Library
Gage Park Sch
Gage Park
Holmes Sch
Gage Park High Sch
Henderson Sch
Hospital
Moran Playground
PENNSYLVANIA
Hermitage Park
Tonti Sch
Assumption Sch
Copernicus Sch
Morrill Sch
St Raphael Sch
Earle Sch
Post Office
Library
Lindblom Park
Lindblom High Sch
Theodore Sch
St Rita Sch
St Rita High Sch
Marquette Sch
O'Toole Sch
Harper High Sch
Golgotha Sch
MARQUETTE RD
St Brendans Sch
Maria High Sch
St Casimir Convent
Holy Cross Hospital
Nativity Sch
McKay Sch
Raster Sch
MARQUETTE PARK
St Justin Martyr Sch
Altgeld Sch
Bond Sch
Tarkington Sch
Murray Playground

APPENDIX C

AIR MONITORING LOGS

DAILY AIR MONITORING LOG
ACTUAL SITE CONDITIONS

Station/ Location	Date	Time	am/pm	Type of Equipment CGI, OVA, RAD MTR, Tip II	Canonie Inventory Number	Reading	Units	Summary/Comments

Date/Time of Calibration:_____

Equipment Calibration Data	Initials	Background Readings	Equipment Calibration Data	Initials	Background Readings
OVA_____	_____	_____	Oxygen Meter_____	_____	_____
TIP II_____	_____	_____	Noise Level Meter_____	_____	_____
HNU_____	_____	_____	Radiation Meter_____	_____	_____
CGI_____	_____	_____	Other_____	_____	_____

Note: All monitoring equipment is to be calibrated once daily (minimum) or as required by site conditions or instrument operation.

CanonieEnvironmental

APPENDIX B

SAMPLE CUSTODY AND SHIPPING PROCEDURES

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LIST OF FIGURES

APPENDIX B

CANONIE SAMPLE CUSTODY, PACKING, AND SHIPPING GUIDELINES

1.0 PACKING AND SHIPPING GUIDELINES

1.1 Introduction

The Federal Regulations set forth by the Department of Transportation (DOT) for the packaging, labeling, and shipping of hazardous materials are extensive and broadly applicable. Therefore, a copy of the DOT requirements as described in the Code of Federal Regulations, 49 CFR 171-177, is an essential reference for those anticipating the need to ship samples of hazardous materials. What follows are generalized guidelines for compliance with DOT standards, along with references to the applicable sections in the Federal Register. It may be prudent to check with state and local agencies for any additional requirements or restrictions they may have.

1.2 Sample Types

In selecting the proper shipping procedures, it should first be decided which of the two basic categories the sample falls into: Environmental Sample or Hazardous Substance Sample. An additional need for this distinction is to provide bases for selecting health and safety precautions for the laboratory personnel receiving and handling the samples.

1. Environmental Samples. These are samples of soil, water, or air usually collected off-site of a hazardous waste dump or chemical spill, and are therefore not expected to be contaminated with high concentrations of toxic materials. The function of "environmental sample" collection is usually to monitor the extent of contamination and/or the off-site transport of contaminated materials. If there is doubt as to the suitability of a sample to this classification, it should be placed in the Hazardous Substance category.

2. Hazardous Substances. Samples falling into this group are known or expected to be contaminated at concentrations that are potentially harmful, including, but not limited to, on-site samples of soil or water; samples from drums or bulk storage tanks, contaminated pools, lagoons, etc; and leachates from hazardous waste sites.

These are operational definitions intended to aid in making decisions concerning sample handling and shipping. The specifics of the DOT definitions are found in 40 CFR 261.3 and 261.4.

1.3 Environmental Samples

Although packaging and shipping requirements for environmental samples (associated with hazardous waste situations) are not as stringent as for hazardous waste samples, it is recommended that the following general packing procedure be utilized to ensure safe delivery and maintain sample integrity. This becomes especially important when samples are being transported by common carrier. If sufficient information is available concerning the nature of the sample material, the following may be relaxed accordingly.

Shipping of Environmental Samples

When a sample is shipped to the laboratory, it must be packaged in a proper shipping container to avoid leakage and/or breakage. A cardboard box that will provide at least 10 cm (4 inches) of tight packing around the sample container must be used. Acceptable packing materials include sawdust, crumpled newspaper, vermiculite, polyurethane chips, etc. Other samples that require refrigeration must be packed with reusable plastic packs or cans of frozen freezing gels in molded polyurethane boxes with sturdy fiberboard protective case. The boxes must be taped closed with masking tape or fiber plastic tape.

All packages must be accompanied by a sample analysis sheet and chain-of-custody record. Complete address of the sender and the receiving laboratory must legibly appear on each package. When sent by mail, register the package with return receipt requested. When sent by common carrier, obtain a copy of the bill of lading. Post office receipts and bill of lading copies may be used as part of the chain-of-custody documentation.

It should be noted that the addition of the following "hazardous" compounds as preservatives to environmental samples will not alter the Environmental classifications, provided the following criteria are met:

1. Hydrochloric acid solutions at concentrations 0.04 percent (w/w) or less;

2. Mercuric chloride in water solutions at concentrations less than or equal to 0.004 percent (w/w);

3. Nitric acid in water, concentrations less than or equal to 0.15 percent (w/w);

4. Sulfuric acid solutions, concentrations less than or equal to 0.035 percent (w/w);

5. Sodium hydroxide in water, concentrations less than or equal to 0.080 percent (w/w);

6. Phosphoric acid in water, concentrations yielding a pH range between 4 and 2.

2.0 SAMPLE CUSTODY

2.1 General

An established program of sample chain-of-custody procedures, to be followed during sample collection and handling activities in both the field and laboratory operations, is required to assure that sample integrity is maintained and data generated through the analysis of the samples are applicable to evaluation of the site. The program is designated to assure that each sample is accounted for at all times. To maintain the highest degree of control in sample handling, sample labels will be utilized so that all necessary information is retained with the sample, and chain-of-custody records and shipping manifests will be employed to maintain control over access to and destination of samples after shipment from the location of sample collection. Additionally, proper completion of field sample logs, accession books, tracking sheets, and extraction logs by appropriate field and laboratory personnel provide for thorough monitoring of the samples from collection through analysis and final report generation.

The objective of sample identification, custody, and monitoring procedures is to assure that:

1. All samples collected are uniquely labeled for identification purposes throughout the analytical process;

2. Samples are correctly analyzed and results are traceable to field records;

3. Important sample characteristics are preserved;

4. Samples are protected from loss, damage, or tampering;

5. Any alteration of samples (e.g., filtration, preservation, or damage due to

shipment or other processes) is documented;

6. A record of sample integrity and analytical fate is established for legal purposes.

2.2 Sample Monitoring Forms

The use of the indicated forms listed above accomplishes one or more of the specific objectives of sample custody, identification, or control. The use of each of the listed forms is discussed below.

2.2.1 Sample Log

The sample log is completed in the field by the individual physically in charge of the sample collection. The sample log correlates the assigned sample bottle designation to a specific well or sample location or other distinguishing feature or attribute (i.e., dummy sample, replicate sample, purge evaluation sample, etc). The sample log also contains information concerning day and time of sampling, type, location, and depth for wells, water depth in the well, purge volume, purge water temperature, pH, and conductivity as a function of time, procedures utilized to preserve the sample for analysis, and the sequence in which sampling was completed. Other relevant information, such as weather conditions, may also be included. The sample log is attached to the chain-of-custody record and shipped with the samples to the laboratory.

2.2.2 Chain-of-Custody Record

The chain-of-custody record is completed in the field by the individual physically in charge of the sample collection. The chain-of-custody record may be completed contemporaneously with the sample log or prior to the shipment of samples to the laboratory. The chain-of-custody record contains information on the date of sample

collection, the sampler, the project name and number, laboratory project number, the number of containers of each sample being shipped, and an itemization of the analyses requested for each sample together with any remarks about the sample prior to shipment. The chain-of-custody record is enclosed with the samples after it has been signed by the sampler. The record is then signed each time possession of the sample changes, with the signature of the person relinquishing and receiving the sample, as well as the time of exchange being indicated on the record. A sample copy of a chain-of-custody form is shown on Figure B-1.

2.2.3 Accession Book

The accession book is maintained at the receiving laboratory by the sample custodian. When samples arrive from the field, each container is assigned a laboratory number which is then logged into the accession book. Other important information entered into the accession book includes the name of the shipping firm or person who delivered the samples to the laboratory, the date received and the individual taking custody, the container size and any comments related to possible mishandling, abuse, or obvious damage to the shipping container or contents, the name of the client, the date and time of sample collection, the sampler's initials, and the site from which the sample originated. The accession book becomes the permanent record of all samples received by the laboratory for analysis. An example page from an accession book is presented on Figure B-2.

2.2.4 Tracking Sheets

The tracking sheets are developed at the time the samples are logged into the accession book. Each sample received at the laboratory has its own unique tracking sheet. The tracking sheet contains the dates the sample was taken, received by the laboratory, prepared for analysis, and finally analyzed. Results of analysis as well as dilution of the sample or any other conditions used are also noted. Tracking sheets are utilized for

presumptive as well as confirming analysis. Final reports are generated from the information on the tracking sheets. The tracking sheet for each sample, as well as any notes, chromatographic charts, and atomic absorption printouts are permanently filed in the records of the laboratory. An example tracking sheet is presented on Figure B-3.

2.2.5 Extraction Log

Various types of analyses require that sample extraction and subsequent volume reduction occur. Each sample which undergoes this process is recorded in the extraction log with information on all conditions which existed during the creation of the final extract. Typical information includes the sample number, initial volume, final volume, date the extraction/volume reduction was produced, analyst performing the work, the methodology utilized, and any comments about the nature of the sample. The extraction log is a permanent record maintained by the laboratory.

2.3 Reagent Documentation

Written documentation of reagents utilized in the laboratory is maintained in a reagent record book. Information maintained includes the date the stock is made, the analyst preparing the stock, the weight or volume of all materials used in the creation of the stock, the source of the chemical, and the source lot number. The record includes information for stock standards, intermediate stock, and quality assurance stock. U.S. EPA protocols are followed in the creation and testing of all stock. All stock bottles are clearly labeled with the exact contents of the bottle, the concentration, the date of creation, the expiration date, and the analyst who created the stock. Reagents are stored at conditions appropriate for each stock and are discarded after standard permissible holding times have been exceeded or if contamination or decomposition of the stock is evident.

For general inorganic analysis, Analytical Reagent (AR)-grade reagents are utilized. Metal analysis performed via atomic absorption spectroscopy employs reagents and solvents of spectroquality. For organic analysis, the minimum purity used is AR-grade. For high-pressure liquid chromatography (HPLC), HPLC-grade solvents are used. Where requested analysis requires more stringent grades of reagents, those reagents are utilized. All base stock for the creation of reagents in the laboratory are purchased from reputable suppliers and are of the requisite standard purity. Typical commercial suppliers utilized by the laboratory for the purchase of base stock and standards include Supelco and Chem Service, along with Foxboro, J.T. Baker, Fisher Scientific, Aldrich, and American Scientific. Several sources are used so that a contamination or defect in one source can be detected, by comparison against another source, before a great deal of false analytical results are reviewed and published. The use of multiple sources in stocking the laboratory's chemical needs, therefore, promotes additional quality assurance throughout the analytical process. Stock and standard solutions are tracked in a manner illustrated on the forms presented as Figures B-4, B-5, and B-6.

PROJ. No.	PROJECT NAME				No. of CON-TAINERS	ANALYSIS										SAMPLE DESCRIPTION/REMARKS
L.P. No.	SAMPLERS: (Signature/Initials)															
No.	DATE	SAMPLE I.D.	TYPE: WATER, SOIL AIR, OTHER	STARTING DEPTH	ENDING DEPTH											
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																

SAMPLES WERE SENT TO: (LABORATORY)

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)

Remarks:

FIGURE B-1

RETURN A COPY OF THIS CHAIN OF CUSTODY WITH RESULTS

CANONIE ENVIRONMENTAL 212 FRANK WEST CIRCLE SUITE A STOCKTON CA 95210

Canonie Environmental

ACCESSION LOG BOOK

RECEIVED FROM	DATE RECEIVED RECEIVER	COMMENTS ANALYZED DISPOSED	LABEL	LAB. NUMBER

FIGURE B-2

Page _____ of _____ LIMS # _____

Method Used: _____ Project # _____

Customer: _____

Analysis: _____

Matrix: _____ Charge: $ _____

SAMPLER'S ID

	Line 1	Line 2	Lab ID #	Container
1				
2				
3				
4				
5				
6				

Date Sampled	Date Received
Date Prepared	Date Analyzed

Sample ID		Column								
Lab ID		Date								
Report Units		Dilution								
Comments:		Worker								
		Sample								
		Final Ans								
✓	MDL	Analytes								
		Antimony								
		Arsenic								
		Beryllium								
		Cadmium								
		Chromium								
		Copper								
		Lead								
		Mercury								
		Nickel								
		Selenium								
		Silver								
		Thallium								
		Zinc								
		Polychlorinated Biphenyls								
		Total Organic Halides								

86-77

SAMPLE TRACKING SHEET
FIGURE B-3

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SAMPLE CONTROL RECORD

REFRIGERATOR_____

LABORATORY SAMPLE NUMBER	ACCESSION BY:	DATE AND TIME REMOVED	*REASON	DATE AND TIME RETURNED

*REASON CODE

1 = INITIAL STORAGE 2 = SAMPLE PREPARATION 3 = SAMPLE ANALYSIS 4 = DISPOSAL 5 = OTHER (INCLUDE BRIEF STATEMENT)

FIGURE B-4

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STANDARD PREPARATION LOG

STOCK CODE No.	DATE PREP.	WORKER SIGNATURE	CODE No. AND NAME OF STANDARD	PURITY	FINAL WT. TARE WT. NET WT. (GRAMS)	ADJUSTED NET WT. (GRAMS)	SOLVENT NAME AND CODE No.	DILUTION VOLUME (ml)	FINAL CONC. (ml)	OBSERVER SIGNATURE

FIGURE B-5

Canonie Environmental

PREPARATION AND STANDARDS TRACKING SHEET

PREPARATION OR STANDARD CODE	PREP. DATE	STANDARDS CODES	VOLUME USED	VOLUME PREPARED	REAGENT AND CODE	PREPARED BY	STANDARDIZED BY / DATE	ACTUAL CONCENTRATION	UNITS	RESTAND. OR EXP. DATE	COMMENTS

FIGURE B-6